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PEDIATRICS AND THE CHILD*

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The development of pediatrics in recent years has been quite remarkable. Two score years ago there were scarcely a dozen men engaged exclusively in children's work, while today there are nearly nineteen hundred physicians devoting their time to pediatrics, and nearly thirty-five hundred more who are particularly interested in our specialty. It is all the more remarkable when one considers its unique position in the field of medicine; for it differs from all other specialties in that it is not based on an anatomic part or system, as ophthalmology, or on a disease, as tuberculosis, or on a method of treatment or practice. As the name denotes, it has to do with the child. This and this alone is the *raison d'être* of considering pediatrics as a specialty, and it has seemed to me at times that we as pediatricians are not always keeping this fundamental conception clearly in the foreground.

It has been my feeling that the name of our section, the Section on Diseases of Children, is a misnomer, or that, at least, it indicates a very limited view or what we usually speak of as pediatrics. The one factor that distinguishes the child from the adult is that childhood is the period of physical and mental growth. If one excepts the relatively few defects and diseases peculiar to growth and development in the child and the sclerotic diseases of the adult, there is no fundamental difference between disease as it occurs in the child and in the adult. Measles is the same disease in the adult as in the child, although a typical disease of childhood. A disease may have a difference in frequency, manifestations and prognosis in the child and in the adult, as for example, pneumonia, but the pathogenesis is the same. From the standpoint of disease, if we except the conditions connected with growth, the pediatrician is nothing more or less than the general practitioner who limits his practice to children. From the standpoint of the specialist, it is the "child angle" that is the essential—not the medical—and I am of the opinion that, in spite of the fact that the important underlying movements in the development of pediatrics have had this vaguely in mind, it has not been clearly expressed in our teaching and practice. If one runs over, for example, the index of a recent volume of any of our pediatric journals, one will be surprised to find how little there is in it about the child. One will find a lot about unusual and rare diseases occurring in childhood, chemistry, bacteriology, etc., or, in other words, about disease in children, and comparatively little about the growth and development of the child and the conditions and factors that tend to direct it away from, or toward, the norm.

Granted that, fundamentally, the physician must have a knowledge of disease, the added knowledge that he must have to become a pediatrician is a knowledge of the child. This requires (1) a knowledge of the physical growth and development of the child and the factors which affect it—or nutrition, and (2) a knowledge of the mental development and psychology of the child. There is no other period of life in which the two are more interdependent. There is an old conception of the pediatrician as the physician who devotes himself to infant feeding—a conception still erroneously held by many today, including even a few specialists. While this is an important part of the work of the pediatrician, in many ways progress in pediatrics in the last ten years has gone hand in hand with the overthrowing of this idea or conception. The school of thought or teaching which dominated pediatrics fifteen or twenty years ago with what was then called "scientific infant feeding," and which we now realize was based on false ideas, while a large factor in developing our specialty, was at the same time one of the chief factors in retarding its development. The turning away from algebraic feedings to the stressing of nursing and hygiene, and the utilizing of simple means or methods of substitute feeding when these were necessary, have given us the time to think of other things. The entire question of the nutrition of the older child has been, with few exceptions, a development of the last few years, and it has been found to be a field of almost equal importance with that of the infant, and a field susceptible of almost limitless exploration.

Turning to the other side of the growth and development of the child, one hesitates to ask how much the average pediatrician or general practitioner knows of the psychology of childhood. I should be embarassed to ask a show of hands on how many here present are familiar not only with the older textbooks on the psychology of childhood, but also with the newer conceptions and developments in this field which have taken place in the last few years. A knowledge of the psychology of childhood is as essential to the pediatrician as a knowledge of disease, as it is an integral part of the development of the child, and without it one cannot understand many of the factors influencing physical growth. In discussing this point with some of our group, I have encountered the view that this pertained to the "art" rather than the "science" of medicine. This so-called art, however, is nothing but the science of psychology—applied, perhaps, by the pediatrician in

* Chairman's address, read before the Section on Diseases of Children at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

a blundering, unintelligent way—which follows as many rules and principles as the science of medicine, and which the psychologist, furthermore, is of the opinion is a science that can be taught. This is a subject of importance to the pediatrician which cannot be stressed too much, and is a field of pediatrics the surface of which has scarcely been touched. It is in recognition of this that the short symposium has been arranged on this year's program.

If pediatrics has any reason to be proud, it is chiefly because of the part it has played in the development of preventive medicine. This is far and away the most important development of our specialty. Child hygiene is at present the most important motif in our work, as it will continue to be in the future, and in child hygiene work it has been the child that has been the topic of consideration—not disease or medicine. Child hygiene is nothing more than the application to the individual of the measures that lead to the normal growth and development of the child, and the methods by which these measures can be applied to large numbers of children. It includes not only physical health but also mental health. The change in conception of the physician from the healer of disease to the counselor of health is the great advance made by the present era of medicine, despite the tremendous impetus and éclat that have been associated with medical research in the last few years; and this is particularly true in the field of pediatrics. Not that in any way the basic importance of medical research is to be belittled or the debt which preventive medicine owes to pure science is to be minimized. The scientific investigator of the diseases that play a large factor in childhood must necessarily be a specialist in some fundamental branch of the medical sciences; but the mere fact that a specialist in chemistry or pathology is studying the diseases of childhood does not necessarily make him a pediatrician—it is a knowledge of the child which does this. The reduction in infant mortality, which is the proudest achievement of pediatrics, has not been due primarily to the development of any method of artificial feeding or to the study of disease, but to education in hygiene and the study and correction of the environmental factors which lower the physical well-being of the infant.

TEACHING OF PEDIATRICS

In discussing the teaching of pediatrics, I intend to speak not of the training of the specialist, which is wholly a question of postgraduate instruction, but only of the question of the undergraduate course in pediatrics. The purpose of the medical school is to give a sound and useful training to the practitioner of medicine, and a broad medical training to the physician who specializes in any branch of medicine. There have been two distinct points of view regarding the position of pediatrics in the medical school curriculum. One is that it is a distinct specialty, and the other that it should be considered and taught as a subdivision of medicine. In the last few years, departments have been organized under both plans with the decision based on secondary considerations, as the question of finance, available facilities, personnel, and the like. It is my feeling that the decision should be based on a broad conception of the medical school curriculum, and that the question should be decided on what it is purposed to teach under the heading of pediatrics. If the pediatric department devotes a large part of its time to the teaching of medicine, with laboratory instruction and the like, the organization is simplified, unnecessary duplication is avoided, and the instruction is harmonized if pediatrics is a subdivision of medicine, as such teaching does little more than extend or amplify the work of the department of medicine. If, however, pediatrics is taught from the standpoint of the child, I believe that it has a just claim to be considered as a specialty. From this standpoint, its problems and special knowledge are something quite apart from the problems of general medicine. I believe that this aspect is worthy of serious reflection in view of the fact that so much of the time of the average department of pediatrics is spent in teaching medicine. Moreover, there has been a decided tendency in the last few years to the organization of pediatric departments along lines intended to develop medical research. While the value of this is obvious and the purpose desirable, it is unfortunate that much of the teaching work has been organized so as to create duplicate or miniature departments of medicine and to overlook the problems of the child for the problems of disease, and in this way has tended to obscure the essential basis of pediatrics as a specialty. I am thoroughly in accord with the recent scientific developments in the study of the diseases of children, but it is my contention that this is only a part of pediatrics.

As a result of my experience during the last four years in giving physicians postgraduate instruction in pediatrics, I have come to believe that what they lack is not a sound knowledge of medicine but a knowledge of the child and of childhood. This apparently has not been given them in their medical school courses, and yet it is the thing they have found they needed in their daily work and practice. It is the duty of the teachers of pediatrics to see that the medical student has this instruction, even if he gets nothing else in his course in pediatrics. The large proportion of children are under the care of the general practitioner, and unless his pediatric training is from the point of view of the child, the children under his care will miss the supervision of the physician who is devoting his time wholly to pediatrics. My conception of the pediatrician is nothing more or less than the physician of broad medical training who, in addition, is trained properly to supervise the physical growth and development of the child, and who is interested enough to watch the reaction of the individual child to its environment.

In an address of this type it is impossible to do more than touch on the points under discussion. I have but one purpose, and that is to express a conviction that I know is growing on many pediatricians with whom I have talked, namely, that the essential development of pediatrics must be from the standpoint of the child and not from that of disease; that the special knowledge the pediatrician must have is a knowledge of the nutrition of the infant and child and a knowledge of the psychology of childhood, and that the application of this must be along the lines of preventive medicine, or what may be roughly summed up as child hygiene. To summarize my theme in a phrase—pediatrics is the study of the biologic problems of the child, not simply the study of disease in children, and it is from this point of view that it should be practiced and taught.

County Health Officers.—The question of all questions in regard to the county health officer is how to keep the office out of politics. Once the office becomes a question of political patronage, all hope of permanent constructive work is gone.—Allen W. Freeman.

THE CYTOLOGIC DIAGNOSIS OF NEOPLASMS *

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Progress in the diagnosis of morbid anatomic conditions has advanced by steps made possible by new opportunities for research: Thus, the first great opportunity came as a result of permission to study the human body by gross dissections; the second came through the invention of the earliest forms of magnifying lenses, and the third came as a result of methods of fixation, embedding and staining of tissues.

We are, I believe, at the beginning of still another opportunity presented by operative surgery through which we are supplied with perfectly fresh, living tissues that are being removed during the active process of disease instead of at the end of disease.

It is this opportunity which I wish to place before you—not so much for what has been accomplished as for what might be accomplished in the future. I have lived through the evolution of, and the height of, the period of the perfection of the technic of fixation, embedding, staining and section cutting. I have been favored also by perhaps the greatest opportunity for seeing surgical material under the most favorable circumstances, and now I hope to stimulate others to grasp the opportunity of utilizing not only a new method of observation but also a new method of applying a knowledge of morbid anatomy to the actual practice of medicine. That this is needed may be seen from the accompanying tables.

TABLE 1.—*Percentage of Incorrect Preoperative Clinical Diagnoses*

Condition	Location	Per Cent. Incorrect Diagnoses	No. of Cases
Benign	Stomach	4	25
Malignant	Stomach	0	29
Malignant	Rectum	0	26
Benign	Uterus	0	138
Malignant	Uterus	0	13
Malignant	Breast	6.5	46
Malignant	Breast	5.5	2,100
Benign	Breast	4.5	44
Benign	Breast	11.2	2,100
Duodenal ulcer	.....	9.7	83
All malignant conditions	.....	2.5	168
All clinical diagnoses	.....	9.9	1,000
In all surgical patients (producing specimens)	.....	2.65	
In all surgical patients (malignancy not even suspected)	.....	0.8	

Stimulated by this demand for a better knowledge of living morbid anatomy and the fourth great opportunity for study of morbid anatomy, I wish to make a few statements from experience. There is a large group of morbid anatomic conditions which general pathologists with low power observations call borderline specimens; they cannot determine whether the condition is benign or malignant; and they cannot decide the histogenetic origin of many conditions which they call neoplasms. Experience has taught me that the latter difficulty is of little importance for practical purposes, although it may be of value from the standpoint of pure research and more fascinating in the presentation of the subject to students. The group in which the diagnosis cannot be made with the old methods is of importance because it is a large one in which we may be, as modern pathologists, of clinical service.

The whole problem, in dealing with this group, is one of the conditions of the material when studied; the technic of preserving these conditions as they exist in their natural state, and the utilization of biologic facts in their interpretation.

TABLE 2.—*Percentage of Cases in Which Clinicians Avoid Making a Positive Diagnosis*

Condition	Location	Per Cent.	No. of Cases
Benign	Stomach	16	25
Malignant	Stomach	13.8	29
Malignant	Rectum	4	26
Benign	Uterus	35.6	138
Malignant	Uterus	77	13
Malignant	Breast	19.5	46
Malignant and benign pathologic conditions in breast	.....	17.5	2,100
Benign pathologic conditions in breast	.....	54.5	44
All malignant conditions	.....	27.3	168
All clinical diagnoses	.....	36.7	1,000
All clinical diagnoses	.....	24.66	16,000
All abdominal and pelvic cases	.....	36.7	698

The methods of study of cells, heretofore utilized, have been handicapped by: (1) changes in morphology due to metabolic disturbances existing in the immediate premortem phase of disease; (2) postmortem changes occurring betweeen the time of death and fixation of tissues; (3) coagulation of cell constituents by strong solutions for fixation; (4) abnormal treatment in the process of embedding; (5) the introduction of foreign pigments into the coagulated cell constituents; (6) the shrinkage coincident to dehydration, clearing and mounting, and (7) the variety of pictures resulting from the cutting of many different planes through coagulated opaque cells.

TABLE 3.—*Percentage of Absolutely Necessary Microscopic Diagnoses in a Series of 12,964 Specimens from 24,368 Surgical Operations*

	Specimens	Diagnosis Possible Only With a Microscope No.	Per Cent.
HOSPITAL A (GENERAL SURGERY)			
Breast	289	18	6.2
Extremities	118	20	16.0
Gallbladder	1,086	0	...
Genito-urinary organs	486	33	6.7
Head	33	17	51.0
Intestines	249	32	12.0
Lip and glands	44	6	13.0
Neck	259	54	20.0
Stomach	191	61	31.0
Thyroid	1,638	4	....
Trunk	153	31	20.0
Uterus (portion)	165	11	6.0
Uterus (entire)	655	21	3.0
Tubes	6.25	4	....
Ovaries	601	5	....
Parovarian cysts	75	0	....
Specimens for diagnosis	432	207	47.0
HOSPITAL B (GENERAL SURGERY)			
General specimens	2,635	461	21.0
HOSPITAL C (EYE, NOSE AND THROAT)			
Diagnostic specimens	461	432	93.0
CLINICAL OFFICES			
Diagnostic specimens	586	558	95.0

On these artificial and unnatural conditions, our present conception of neoplasms is based.

We, in the medical profession, have appeared to be satisfied with these conditions despite the fact that modern biology, which has advanced, is based on facts coincident to the study of living nature. No longer do we base our knowledge of birds on stuffed skins, or our knowledge of plants on pressed dried specimens. We

* Read before the Section on Pathology and Physiology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

go out into the open and study nature as it is, and exclude all modifying factors that might deprive us of the truth.

From an experience which has been very extensive, I shall make a few statements which, if true, greatly advance our efficiency. If thought to be false, the thought may be due to ultraconservatism or indifference. If found, after just trial, to be erroneous, they may nevertheless stimulate some advance.

Fresh living cells of malignant neoplasms are perfect spheroidal or oval bodies presenting large spheroidal or ovoidal nuclei in which may be found one or more large spheroidal or ovoidal nucleoli. In my experience, they contain multiple polar mitotic figures very rarely, but never the so-called atypical irregular or asymmetrical mitotic figures described by von Hansemann and others as characteristic of cells of malignant neoplasms. At least it may be said that any asymmetrical mitotic figure which I have seen may be just as well explained by disintegration of the cells, or by cutting planes through perfectly regular figures. The cytoplasm and nucleoplasm are not reticular, as described and shown in textbooks. They have the structure of a fine emulsion, as described by Bayliss.

Malignant cells resemble morphologically no adult tissue cell in the body, despite the fact that they may have a similar general arrangement. The cells differ from ordinary regenerative cells in having a coarser or denser cellular wall, a denser cytoplasm, a denser nucleoplasm, a larger nucleus in proportion to the rest of the cell, and a larger nucleolus. There is a greater variation in the extremes of size of cells, nuclei and nucleoli than in the normal regenerative cells of repair.

These cells cannot be differentiated, in many instances, by the 16 mm., 8 mm. or 4 mm. lenses from regenerative cells; the stages of differentiation cannot be accurately recognized, and the relative size of cellular component parts cannot be definitely determined. We have no standard of comparison with normal cells, because histologists have not given high power morphologic standards for living human cells.

Many, if not all, general pathologists—whose knowledge is based on methods of fixation, embedding and staining, and low power pictures of postmortem material—tell us that diagnoses cannot be made on two or three cells, and I agree to this with such methods; but I know that it can be done by oil lens studies of perfectly fresh living cells with or without Unna's polychrome methylene blue or vital stains, because such diagnoses are being made almost daily and checked clinically. A few examples may serve to show the methods of checking.

A specimen was removed from a rectal polyp; it was reported malignant on fresh tissue examination, the diagnosis being made on a few cells. Grossly and clinically, the condition was not considered malignant; local removal was done. The patient died of recurrence.

A gastric ulcer was excised; a few cells were found answering to the foregoing description, but I was not confident enough of my diagnosis to demand wide resection. The patient returned in less than two years with an inoperable carcinomatous condition of the stomach.

A small specimen, the size of the head of a pin, was accidentally removed during the utilization of a tube in extracting a gastric test meal. It was reported carcinoma; the patient did not have the clinical signs and symptoms of gastric cancer; there was no obstruction, no palpable tumor; no abnormal gastric analysis, no loss of weight which might not be ascribed to diet. The surgeon and associated clinicians believed the case to be one of pyorospasm—probably secondary to cholecystitis or appendicitis. They performed an exploratory operation, however, on the basis of the pathologic diagnosis. A carcinoma was found on the posterior wall; the condition was inoperable.

The uterus of a patient, aged 35, was curetted; a small portion of the endometrium was removed. Grossly, there was no appearance of carcinoma. The specimen was small, and there was nothing in the arrangement of the tissues present to allow the diagnosis of carcinoma. On a study of the cells unfixed and stained with Unna's polychrome methylene blue, they were found to be completely undifferentiated (large spheroidal and ovoidal with large ovoidal and spheroidal nuclei which contained one or more densely stained large nucleoli). A diagnosis was made of malignant cells. The uterus was removed on this diagnosis and was found to contain two polyps, one benign and one containing a carcinomatous area 1 cm. in diameter.

These are only a few of the many illustrations which might readily be given from a series of more than 40,000 neoplasms. They serve to show that a new method of diagnosis is available to him who will take the time to become familiar with unfixed perfectly fresh cells by means of the highest power of the microscope. A bit of tissue, immediately on removal, is placed on the stage of a freezing microtome, frozen, and cut from 5 to 15 microns thick. The section is then placed in physiologic sodium chlorid solution and unrolled. It is then dipped by means of a glass lifter into a strong solution of Unna's polychrome methylene blue from one to ten seconds, and then transferred to and washed in physiologic sodium chlorid solution, from which it is transferred to Brun's glucose, from which it is almost immediately drawn up on a slide and studied.

When such a preparation is properly made, the only part of the regenerative and neoplastic cells which stains is the nucleolus. The differentiation between regenerative cells, partially or completely differentiated cells and the undifferentiated cells of malignant neoplasms may be made, provided the examiner is familiar with the high power morphology of normal adult cells of the differentiated tissues of the human body, and has a knowledge of the normal phases of differentiation in the normal regeneration of tissues.

The general pathologist and postmortem morbid anatomist cannot be expected to make such diagnoses without special training. This is no more to be expected than we should expect any one who can operate an automobile to operate an aeroplane.

In conclusion, this method of diagnosis has a clinical value which is increasing rapidly as the public and profession becomes educated to early diagnosis. It has value in research because we know very little about living cells, our knowledge being based on artefacts.

ABSTRACT OF DISCUSSION

DR. MICHAEL G. WOHL, Omaha: Dr. MacCarty has said that he diagnoses carcinoma of the stomach from bits of tissue that he has obtained from the stomach washings; but he likewise said that when the patient was opened up by Dr. William Mayo, an advanced form of cancer of the stomach was found. If Dr. MacCarty is able to diagnose carcinoma in its earlier stage by the oil immersion lens rather than by the usual power lenses and the conventional embedding methods, then his method has a definite field of practical usefulness. I have examined bits of tissue from the pleural cavity and washings from the urinary bladder, for instance, and diagnosed them as carcinoma by the paraffin method, the condition being proved by postmortem in the former and surgical intervention in the later; but these cases were so

advanced that any finer cytologic methods of diagnosis would have been of no practical value. We all recall the difference of opinion that was voiced some years ago on slides that were sent by Dr. Bloodgood to different pathologists. How much greater difference would there have been were these slides studied by the oil immersion lens? It has been our experience that we are able to decide the question of malignancy of tissue by the study of the relationship that exists between the functioning parenchyma and its supporting connective tissue framework in conjunction with a thorough clinical history of the case rather than by picking out certain so-called "cancer cells." We all know the bizarre microscopic picture we are apt to see in pathologic conditions of glandular organs such as the stomach and breast, and in uterine scrapings, and we often find inflammatory changes giving us pictures closely resembling carcinoma, yet later clinical experience proves them to be benign. I recall a woman that had a mastitis of the breast; a section for diagnosis revealed a picture that three experienced pathologists diagnosed as malignant. The patient, who was the wife of an undertaker, refused operation, and today, six years later, whenever I see her in our town, she serves me as a living reminder of our mistake. The cells that the author has shown on the screen look to me like cells that we often see in benign irritative conditions. I should like to ask him to tell us definitely, if possible, the exact points of differentiation between such cells and those that spell for him malignancy. Of course, the paper is somewhat revolutionary in character, and if Dr. MacCarty could prove to us that he can diagnose earlier cancer, the well known criteria for which are fulfilled, by the study of the fresh individual cells, I should be more than glad to learn these finer cellular differentiations of the cancer cells.

DR. WILLIAM OPHULS, San Francisco: I have been greatly interested by the paper of Dr. MacCarty and by his attempt to go back as much as possible to the study of living structures. I am sure that this idea is good and will prove helpful. Of course, the question from a practical point of view is whether by such studies malignant changes in cells can be discovered earlier than by the ordinary methods. This is the main purpose of the whole investigation, and it will take a careful comparison of the two methods by competent observers to settle this point. I do not think that anybody will have any hesitation in saying that in certain cancers there are many cells which at first glance we can recognize as malignant; but whether these morphologic changes in the cells occur first or whether the cells first exhibit their malignant properties in other ways, say, by invading deeper structures, is something which it will take much study to decide, not offhand reasoning.

DR. H. E. ROBERTSON, Rochester, Minn: The proof of the pudding is the eating, and if Dr. MacCarty, in the years that are to come, can demonstrate that he can diagnose from individual cells examined freshly tumors that ordinary pathologists could not diagnose if they were stained in the routine manner, why, then the proof of his thesis has been well established. Dr. MacCarty has had enough experience and has had access to enough fresh material so that, as time goes along, he can help settle this question. But it will take other pathologists, using the criteria that he establishes, and using the methods that he advises, to confirm or disprove his conclusions. The important clinical point, to me, is rather a side issue, and that is the point that, more and more, work such as Dr. MacCarty is doing is impressing on the minds of surgeons the fact that it takes the microscope to decide many of these questions; and I hope that that group of surgeons who are trying to educate themselves in gross pathology in order that they may get away from the pathologists entirely and diagnose their own tumors will grow to be a diminishing group as time goes along, because the time when these tumors are curable, as far as the patient is concerned, is the time when early diagnoses, such as Dr. MacCarty is attempting, can be made.

DR. WARD BURDICK, Denver: Will Dr. MacCarty say something regarding the minute details of the technic of making these examinations?

DR. F. W. HARTMAN, Detroit: Does Dr. MacCarty find, in these inflammatory conditions, that stimulation of the epithelioma gives him the same type of cells? It seems to me that I have seen the same type of cell in smokers' burned lips and precancerous lesions of the breast, for instance, certainly before the stage comes at which the entire breast has to be excised to make the cure. I have also seen the same cells in attempting to produce malignant changes in the breasts of rabbits with stimulation. We were able to produce sometimes four or five mitotic figures, and also this type of cell; still, those lesions go right on and resolve, and yet we were unable to produce an invading metastasizing growth. I want to ask Dr. MacCarty whether this cell always means that it is a lesion which is malignant and which will metastasize and invade the surrounding tissue.

DR. H. J. CORPER, Denver: Just a point about Dr. MacCarty's last lantern slide: I know there are many among us who wondered about the significance in carcinoma of the particular peculiar type of cell pointed out in this blood slide. Is it of any diagnostic or prognostic importance?

DR. ALBERT A. SCHNEIDER, Portland, Ore.: It was Dr. Virchow, sixty years ago, who deplored bitterly the fact that we were getting away from the examination of living cells and centering our attention on the study of sectioned and stained material. I was rather strongly impressed by that opinion of Dr. Virchow's, and early in my work with the microscope, which now extends over a period of nearly forty years, I centered my attention on the study of living tissue. It is something like four or five years ago that I began to give some attention to cancer, and following Dr. MacCarty's idea, I have made use of living cells. The method which I have followed is simple. I make scrapings of the pathologic tissue which is supposed to be cancerous, mounting it in physiologic sodium chlorid solution or in hydrant water and examining it at once. I do not, as a rule, employ the oil immersion lens, simply using a power of about 500 diameters. I have found many pictures that were exceedingly interesting and extremely novel from the standpoint of the routine pathologist. In the examination of fresh tissue according to Dr. MacCarty's method one is enabled to observe structures that do not appear in the stained and sectioned material. It is these new structures that have interested me vitally, and I feel that by and by those who follow Dr. MacCarty's method will probably be able to tell us what cancer really is. Our cancer diagnosis leaves much to be desired. It is six to one and a half dozen to the other as to whether a surgeon diagnoses a case correctly. I have at the time three cases under observation in the bay region; one case is emphatically declared to be inoperable carcinoma of the intestinal tract by the surgeon who operated. I have just had a report from another pathologist who asserts with equal emphasis that there is absolutely no sign of cancer.

DR. WILLIAM CARPENTER MACCARTY, Rochester, Minn.: I am not looking for a new discovery; I merely want to give a new opportunity. I suggested at the beginning that this was a new opportunity of research. I am fairly familiar with the history of medicine, and I know what happened to develop some of the epoch-making things. I know the study that Virchow started, and I know what his conception of cellular pathology was; and that is quite different from the cellular pathology I am talking about. Research is the important thing. Those who are interested in cells should try to make some observations in order to confirm or refute anything I have said. As for the friendship of surgery, as one of the speakers mentioned, I do not know whether I have the surgeons' friendship or not, but I happen to have been with these surgeons for sixteen and one-half years, during which time I have examined 250,000 of their specimens, which included 40,000 neoplasms. As to Dr. Bloodgood's specimens which he sent around to different pathologists, Dr. Bloodgood did not honor me with those specimens, and I did not make the diagnosis. But last year I honored myself by getting Dr. Bloodgood to give me a chance to examine the specimens, and I, with my associate, Dr. Broders, spent two days with him and gave him the diagnosis and prognosis from the slides themselves. Dr. Bloodgood had the histories, the roentgenograms and the operative findings, and when we got

through he said, "I suppose you boys would like to know what your batting average is." I said "All right, if you want to tell us." He said "You have made the diagnosis and prognosis 100 per cent." I did not say that one could always make the diagnosis of a malignant neoplasm from cells; I said it *can* be done. And there are many cases that I see in which I would hesitate to make the diagnosis; but if I saw the cells which I saw here, then I would do just what I said I would. The technic is simple: The tissues are obtained perfectly fresh and examined immediately. That is absolutely essential. They should not be allowed to stand around and disintegrate. In thirty minutes one can see disintegration of cells if one watches them, after starting out with living cells. These sections are cut on a Spencer microtome from 5 to 15 microns thick. It does not make any difference about the thickness. The perfect living cell is not coagulated; one can look right through it; a section from 5 to 15 microns is just as good as one of 5 microns. These sections are cut into physiologic sodium chlorid solution, just barely dipped into strong Unna's polychrome methylene blue, washed in physiologic sodium chlorid solution, placed in a solution of glucose, and mounted on a slide and studied with the oil immersion lens with ordinary artificial light.

Regenerative cells cannot always be differentiated from malignant cells. Many factors must be taken into consideration in studying malignancy, degrees of cellular and tissue differentiation, lymphocytic infiltration, fibrosis and hyalinization. It is not morphology alone that determines it. The slides of cells in the blood I merely threw on the screen as a matter of curiosity. They have nothing whatever to do with cancer, merely illustrating that hematology should be restudied—in view of the new opportunity of studying living cells—if we are going to have the best type of hematology. Those interested in blood should attempt to do something in a new way. Whether one succeeds or not, one should at least do something. All I ask is that we just open our eyes to new opportunities.

THE OCCURRENCE OF BLASTOCYSTIS IN INTESTINAL INFLAMMATION

WITH A NOTE ON ENDOLIMAX NANA*

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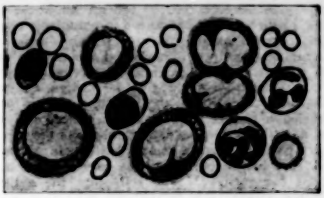
I have previously recorded that *Blastocystis* is a very common inhabitant of the intestine of man in the United States[1] as well as in other countries. In the previous reports it was given as present in the stools of about 50 per cent. of hospital inmates in South Carolina, being somewhat more frequent in cases of pellagra than in others. It was also given as constantly present at necropsy in the large intestine in a small series of pellagrins. The activity of the organism, as evidenced by the presence of great numbers, by larger size and by active division, was much greater in case of diarrhea and especially in case of ulceration of the intestine. One case of pellagra was cited in which there was marked ulceration of the cecum, extending over the ileocecal valve into the lower end of the ileum, with *Blastocystis* present in large numbers in the ulcers, the organisms being large and active. This was the only instance in which the organism occurred in the small intestine, and here it was limited to the extent of the ulcers of the ileum.

In examination of feces in Texas, *Blastocystis* has occurred in about the same proportion of people and has also occurred more actively in those with diarrhea. On account of the fact that *Blastocystis* grows very well in liquid culture mediums in which the nutrient element is blood serum or a like substance,[2] the activity of the organism in diarrheal stools and in intestinal inflammation has been explained on the basis of a favorable medium for growth, and the organism has not been seriously considered, beyond a suspicion, as pathogenic in any way.



Blastocystis from rectal ulcers mixed with blood cells.

Wenyon[3] has noted that the organism, while very commonly found in healthy people, has a tendency to great activity in case of diarrhea, and he records an instance in which *Blastocystis*, previously present in small numbers, increased markedly in association with the development of acute diarrhea, and subsided to the original proportions after the attack was over. He looks on this as suggesting a possible pathogenicity for *Blastocystis* when present in any quantity; but, as is entirely proper, he cautions against the arrival at such a conclusion without the elimination of all other factors.

REPORT OF CASE

Recently an instance has come to hand which has aroused further suspicion of the organism in connection with intestinal inflammation.

A young man stated that he had an automobile accident three months previously, which was followed in a few days by an attack of acute diarrhea, with the passing of some blood and mucus. Attacks of diarrhea without pain or tenesmus followed every few days for three months with a constant looseness of the bowel movement from which he had not been free except for a few days following a twenty-four hour fast and the taking of bismuth. He was in good general condition, with a negative history and clinical laboratory examinations except for the findings mentioned. The roentgen-ray examination revealed an apparent spasticity of the intestine from the middle of the transverse colon to the rectum, along which course there was abdominal tenderness. The mucous membrane of the rectum was red and inflamed, and showed numerous small ulcers. There were 10,500 leukocytes per cubic millimeter of blood, with 63 per cent. polymorphonuclears. The stool was semiformed and brown, and contained no mucus, leukocytes or red blood corpuscles. *Endolimax nana* was present in considerable numbers, and there was a fair number of small *Blastocystis* organisms. Smears taken directly from the ulcers after cleaning the surface showed no amebas, a fair number of miscellaneous bacteria, and enormous numbers of *Blastocystis*. The average size of each *Blastocystis* was about 25 microns, and a large proportion of them were in active division, which consisted of binary division and multiple fission. These organisms were surrounded by the characteristic mucilaginous envelop, which stained a finely granular red with Wright's stain. In the same preparation, the periphery of the organism was blue, the nucleus red,

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* Read before the Section on Pathology and Physiology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Lynch, K. M.: The Pellagrous Intestine and Some of Its Parasites, South. M. J. **10**: 286 (April) 1917; Blastocystis Hominis: Its Characteristics and Its Prevalence in Intestinal Content and Feces in South Carolina, J. Bacteriol. **2**: 369 (July) 1917.

2. Barret, H. P.: A Method for the Cultivation of Blastocystis, Ann. Trop. Med. **15**: 113 (July) 1921. Lynch, K. M.: Blastocystis Species in Culture, Am. J. Trop. Med. **2**: 215 (June) 1922.

3. Wenyon, C. M.: Human Intestinal Protozoa in the Near East, London, 1917.

and the central body pink. In some of the bodies were a number of small, rounded, light red areas, but no peripheral budding was seen. Multiple fission, with four cells formed, was not as common as simple binary division.

These features apparently identify the organism as *Blastocystis hominis*,[4] although the organism was not obtained in culture in this case.

The fact that *Blastocystis* occurred here in small numbers and of small size in the passed stool, but in large numbers and in large, actively dividing form in preparations taken directly from cleaned rectal ulcers of unexplained origin, seems to warrant suspicion of its connection with the ulcerative process. It must be recognized that, as previously expressed, this may be nothing more than growth of the organism in a favorable medium; but its close relation with an ulcerative lesion on several occasions and its liking for such a medium must place it under suspicion as a possible factor in intestinal inflammation.

In this instance it is worthy of note that *Endolimax nana*, although present in the stool, did not occur in the ulcers.

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ABSTRACT OF DISCUSSION

DR. DAVID J. DAVIS, Chicago: I have seen a few cases of ulcer of the rectum in which the smears made from the discharge showed large numbers of eosinophilic leukocytes. Such cases have been called eosinophilic proctitis. I do not know what the significance of the eosinophils may be, and I would ask Dr. Lynch whether he has encountered these cells in these interesting cases he has investigated, and what the significance of eosinophils in rectal ulcers may be.

DR. KENNETH M. LYNCH, Dallas, Texas: I am sorry that I cannot give any definite light on the question asked by Dr. Davis. In the smears from these ulcers there were no definite eosinophils, although the polymorphonuclears rather showed eosinophilic tendencies in most of them. As to what that means, of course, I am not prepared to say at present. Blood smears, however, did not give any evidence of these eosinophils, and it appears to me that it was a local change in the leukocytes, I suspect as the result of contact with some material in the ulcers, in all probability.

4. Lynch, K. M.: Cultivation of Blastocystis and Determination of Species, Am. J. Trop. Med. 2: 539 (Nov.) 1922.

Seventeenth Century Pioneer Life.—The U. S. Department of Labor has issued a report on "Maternity and Infant Care in a Mountain County in Georgia." The survey, which reported the eighth of a series of studies of country babies and mothers made by the Children's Bureau in six states, says that noteworthy results in the protection of mothers and children were obtained through legislation and an effective administration of the state board of health since the time of the bureau's study. The county surveyed by the bureau lies in the southernmost extension of the Blue Ridge Mountain belt. The lack of good roads makes the homes sometimes almost inaccessible. Some could not be reached even by wagon, having to be sought out by trail over mountains and through streams. The father of a family whose home was separated from the nearest postoffice by a mountain range had not called for his mail in twelve months; the mother had not been to the settlement for seven years. Another woman had not been to the nearest settlement, 6 miles distant, in twenty years. A mother who lived 3 miles from town stated she had lived there a year without seeing another woman. Eighty-six per cent. of the mothers questioned went through pregnancy without any medical aid whatever; 77 per cent. of the mothers who were attended by physicians were not visited at all after the confinement, and no physician was reported in attendance for more than two thirds of the babies in the group studied which died in their first year.

CERTAIN FACTORS IN DEVELOPMENT OF NEUROSYPHILITIC LESIONS IN LATE CONGENITAL SYPHILIS*

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The late appearance of syphilitic lesions in the various organs of the body in so-called congenital syphilis has always aroused interest ever since it was first recognized that the disease may be implanted during intrauterine life and remain unrecognized until it manifests itself in late childhood or puberty, after emotional disturbances, infections and trauma. The protean features of syphilis are remarkably well illustrated in this department of the subject. Although the present communication deals chiefly with late manifestations of syphilis of the nervous system, in the literature may be found many instances of gumma and other tertiary lesions of the vascular apparatus, upper respiratory tract, eyes and abdominal viscera.

In 1879, Augagneur pointed out that these lesions were always tertiary in character and never secondary, and he made the interesting observation that whenever he had an opportunity to investigate the stage of the disease in the parents at the time of procreation, he invariably found it to be actively contagious. He divided the etiologic factors determining the late appearance of congenital syphilis into two groups: (1) those depending on the parents, that is, the hereditary traits constituting resisting power to the disease, etc., and (2) although much less reliable, the age, sex, physiologic condition and environment of this last group, the age of puberty and trauma being the most considerable factors.

W. S. Anderson, in 1902, reported the relative frequency of late syphilitic lesions of the upper respiratory tracts in children and adolescent girls. Diard, in 1901, describing gummatous lesions of this type, said that clinically they do not differ from lesions in adults, and that the diagnosis rests on the history of the parents and collaterals. The maximum frequency of gummatous lesions, like other manifestations, lies between the ages of 10 and 20, and young girls are especially prone at this time.

T. T. Meyer, in 1904, found that the etiologic relations of congenital syphilis to chronic brain affections in children are very restricted and that, aside from hydrocephalus, which often seems referable to congenital syphilis, chronic encephalitis of children is rarely caused by this etiologic factor. He ranks syphilis last among the infections transmitted by the progenitors.

E. Fournier, in 1907, reviewed the subject of syphilitic heredity in children, adolescents or adults, and again in 1912 insisted that these lesions may appear at any age, and that although childhood and early adult life are the periods at which they are most frequently seen, nevertheless it is possible to find adults and even the aged with characteristic lesions. As a rule, they become progressively rarer as the individual approaches maturity. He pointed out that the nervous system is most frequently affected in some form or other.

F. Bering believes that there is a probability of only a few isolated spirochetes passing from the maternal to the infantile organism, in those cases in which chronic processes advance slowly, as, for example, in bone diseases. It may be that the spirochetes penetrate

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at a very early stage of fetal growth into the vital parts of the affected bones, producing local changes which lead to arrest of development and malformations, in the same manner as in the case of Hutchinson's teeth.

W. T. Heimann believes that congenital syphilis is transmitted to its victim during the most important period of development, namely, before birth, and that the struggle to overcome this burden takes place partly before and partly after birth. Thus, aside from its actual pathologic alterations, the disease may cause all sorts of anomalies of development, physical deformities and dystrophies and mental retardation, if not actual imbecility or even insanity; except for these considerations, prenatal syphilis and postnatal syphilis are identical.

Hochsinger states that the nervous system is most frequently attacked in children with congenital syphilis. In a series of 112 cases, 43 per cent. were found to exhibit some clinical signs of affections of the nervous system, either as hydrocephalus, Little's symptom complex, epilepsy, paresis, tabes, rigid pupils, congenital inferiority (nervous states, hysteria) and imbecility.

In congenital syphilis, as in the acquired form, there is the same tendency to develop neurosyphilis, and also to develop it after a period of latency. If we are to believe Hochsinger's figures, and I am sure they are correct, a relative increase in frequency of lesions of the nervous system is also found in the congenital forms.

On the other hand, no one will deny that the appearance of gummatous or other tertiary lesions of the acquired type of the disease after a period of latency extending over years without primary or secondary lesions is far more rare than the like tendency of neurosyphilitic lesions. The reasons for this peculiar capacity of the spirochete to exist and multiply within its host without other signs than those of delayed development or other evidence of deviation from the normal strain, until after some factitious event such as puberty or trauma, are still obscure. The statement has been made that there exist several strains, differing in virulence in incubation time and affinity for different structures. It is based chiefly on the fact that there are many well known instances of tabes and paresis developing in from five to seven individuals all infected from a single source, and the interesting experiments of Marie and Levaditi. These authors insist that the spirochete causing general paresis is different from that of banal syphilis; they call it neurotropic, and the latter dermotropic. In support of their views, they point out that the spirochete recovered from the blood of patients with general paresis is characterized by a longer incubation period from man to rabbit and from rabbit to rabbit; the initial lesion is much milder; it is not transferable to monkeys or to man, and the rabbit inoculated with dermotropic virus becomes immune to this virus, but not to the neurotropic virus, and vice versa.

These interesting experiments need further confirmation, however, and up to the present the life history of the spirochete has been too obscure to permit of positive conclusions. As a matter of fact, there is quite as much evidence, both clinical and experimental, against the existence of different strains as there is in favor of this theory.

RESULTS OF SYPHILIS ON OFFSPRING

For example, the following case of juvenile general paralysis demonstrates that a patient with banal syphilis, i. e., an ordinary primary lesion with secondary eruption including mucous patches, may so infect his offspring that miscarriages, weaklings, one daughter with syphilitic teeth and a child with juvenile general paralysis constitute the result of his efforts at procreation:

G. D., a youth, aged 16 years and 6 months, had had a normal birth and developed normally, except that the teeth came rapidly at the eleventh month. He walked at the age of 9 months, and talked about the same time. He had a mild attack of pneumonia at 2½ years, and measles, chickenpox and whooping cough between the second and third years. Between the eighth and ninth years he exhibited a ticlike movement of the eyes, which disappeared after some medicine had been given. A year or two later he twitched his mouth in the same fashion; this affection lasted only two weeks. He went through school in an uneventful manner until he was about to graduate at the age of 15½. At this time he was required to stay home from school for religious preparation for his first communion. This happened to be the week of his examinations in school. During this week he exhibited a marked change of attitude toward religion, and whereas formerly he had been quite indifferent, he now became actively interested. The Monday after communion he returned to school, but through a misunderstanding developed the idea that he would not be permitted to graduate. He became agitated and upset; and, although he was given the opportunity to take a special examination with the other Catholic boys, he refused to do so and failed to graduate. During the ensuing summer months a marked change in his personality was noted. He became irritable and quarrelsome; he quarreled with his companions; he became seclusive; he did not go out with them, and he exhibited a memory defect and made stupid mistakes in the matter of errands. At this time he developed a definite speech defect, characterized by ataxia, and syllable stuttering. He became lazy, apathetic and indolent. He returned to school in the fall, and after about a month he was found unfit to continue. He was irritable, indolent, obstreperous and very excitable.

Physical examination in February, 1923, gave the general impression of his being well nourished, slow, dull, apathetic and of poor comprehension but affable. The first and second cranial nerves were normal. The pupils were slightly irregular in outline, and the reaction to light was sluggish. The extraocular muscles were normal. The other cranial nerves were normal. There was a fine tremor of the extended tongue and lips. The speech was slow, with slurring syllables. The gait was slow and steady, with slight Romberg sign. No tremor or incoordination of either arms or legs was noted.

The deep reflexes of the arms were all present, active and equal. The abdominals were present, active and equal. The right knee jerk was somewhat diminished; the left was normal. The right ankle jerk was normal, the left ankle jerk diminished. Cutaneous sensibility was normal. The teeth were normal and rather small. The Wassermann reaction was four plus in the serum. The spinal fluid Wassermann reaction was four plus with 0.4 c.c. of fluid. There were 122 cells per cubic millimeter, and a moderate increase of globulin. The colloidal gold test was 5555555421.

The emotional tone was one of silly elation; there was no depth of feeling, and he could be suggested into a superficial sadness with comparative ease. There was no discrimination in his statements. Insight was almost entirely lacking. His hand-writing was unsteady, especially in the finer coordinated movements. Spontaneous thought appeared to be lacking.

The family history was as follows: The patient's father, a serious, middle aged Italian, was of good intelligence, although lacking in education. The mother was a hard working, intelligent, cooperative woman who had had no serious illnesses and was robust. The two oldest children were 33 and 30 years of age, respectively. They had always been well, and they had each borne healthy children. Two years after the birth of the second girl, that is, about twenty-eight years ago, the father contracted syphilis when his wife was on a visit to Italy. He took treatment chiefly by mouth, with a few injections, for about three years, but during this course of treatment he had intercourse with his wife. The next six conceptions were males, and all died. One was a stillbirth, the fetus weighing 14 pounds (6.4 kg.); one child succumbed to pneumonia, one to measles and the other three to so-

called croup, all before the age of 3. The ninth conception was a miscarriage; the tenth was a girl, who is now 19 or 20 years of age, who developed normally but exhibited slight conduct disorders at the age of 17, which consisted in running away from home and going to live with an uncle because her father refused to allow her to go to dances. By living with the uncle she met the man she subsequently married, and has borne two healthy children by him. The eleventh conception was the present patient. The girl just described exhibits typical hutchinsonian teeth of the horizontal rib type; otherwise she is apparently healthy, and shows no objective signs of syphilis of the nervous system.

The serum examinations of the father, mother and daughter are negative. Objectively, neither the father nor mother shows any signs of syphilis of the nervous system. The pupils, station, gait and reflexes are normal.

We were able to procure the spinal fluid of both father and mother. Wassermann reactions in the serum and in the cerebrospinal fluid of the father and mother were negative. There was no increase in cells or in globulin, and the colloidal gold test likewise was negative. The reaction of the serum in the daughter was negative. We were unable to obtain permission for a lumbar puncture on her.

AFFECTION OF ENDOCRINE GLANDS IN CONGENITAL SYPHILIS

There can be little doubt that these changes are reflected in the structural development of the individual, for there is a constantly increasing number of observations on the relationship of congenital syphilis to these structural defects, through the presence of spirochetes rather than by their influence on the germ plasm itself.

There is considerable evidence of disease of the endocrine glands in congenital syphilis, consisting chiefly of ordinary chronic fibrous changes, which are therefore different from the usual lesions of the tertiary type. The suprarenals, thyroids and hypophysis may contain numberless spirochetes without gross lesions. Fibrosis, atrophy and hydropic changes of the parathyroid have been noted.

Strauch reports that although the suprarenals in congenital syphilis may be literally swarming with spirochetes, very little structural change is found aside from infiltration and fibrosis of the capsule. Simmonds, in a study of the changes in the hypophysis, finds that syphilitic affections of that organ are more frequent in congenital than in acquired syphilis; and although gummas are occasionally seen, chronic fibrosis changes are those most often encountered.

According to Strauch, congenital syphilis not infrequently inflicts damage involving the whole organism through remote effects of local organic lesions, especially by alteration of one or more members of the endocrine cycle with subsequent disordered function.

Thyrogenic disorders in early childhood or adolescence, and pituitary dystrophies, nanism, gigantism, acromegaly and suprarenal disturbances have been described by Hutinel in a publication on hereditary syphilis and its dystrophies. Pentagna found that in 43 per cent. of his cases of all types the patient had congenital syphilis.

Barthelemy believes that nanism, infantilism, gigantism, dyscrasias and dystrophies are caused by the effects of syphilis on the endocrine glands; i. e., the mechanism that controls the development of body and mind.

Hochsinger found that syphilitic infantilism occurred only in children that had marked heredosyphilitic manifestations during the first few weeks of life, whereas Peritz and others observed it especially in those in whom previous local signs were absent. They point to juvenile tabes, which is often combined with infantilism, as illustrating this.

Kahan believes that the long standing character of the lesions of the internal secretory glands found in necropsies in cases of juvenile general paralysis seems to show that the syphilitic virus begins by first attacking the endocrine glands, whose antitoxic power is considerable. It is only after thus having partially deprived the nervous system of stimulating and antitoxic endocrine substances that the syphilitic virus may here produce irremediable effects through its prolonged action. It is at the time of puberty, namely, when the activity of the endocrine glands is in a state of usable equilibrium, when their antitoxic power is temporarily weakened, that the nervous system in general and the cerebral cortex in particular become an easy prey of syphilitic toxins.

Cordier and Rebatta describe delayed infantilism, in which retrogressive changes indicative of this state appear after puberty in individuals who have undergone complete sex and genital development. They are therefore not persistent infantile conditions. They find two etiologic varieties, one of the thyroid with myxedematous features, and a gonadal type, but they do not attempt to ascribe it to congenital syphilis.

INFLUENCE OF GONADS

On the other hand, we have certain evidence that the gonads may play an important rôle in the capacity of the host to arrest the development of acquired syphilis.

J. E. Moore, in a study based on 5,400 cases of syphilis in which the percentage of females nearly equaled that of the males, concludes that:

Clinically, neurosyphilis is three times as frequent in men as in women.

The nervous system of the two sexes is invaded with equal frequency in the early stages, as shown by the table of percentages of spinal fluid abnormalities.

The course of early syphilis is greatly altered by the simultaneous occurrence of pregnancy.

Pregnancy is a most important point of differentiation in the life history of both sexes.

In women with late syphilis (of more than one year's duration), the incidence of abnormal fluids is twice as high in a group of sterile women as in a group in which one or more pregnancies have occurred since infection.

Almost half the women clinically neurosyphilitic have not been pregnant since infection.

It is suggested, on the basis of this study, that pregnancy is one factor which may partially account for comparative freedom from neurosyphilis. The same phenomenon is observed whether tertiary manifestations were present or whether syphilis is latent.

It is not suggested that pregnancy occurring some time after infection and during the usual course of early syphilis may exert an influence on the subsequent development of neurosyphilis, nor does the silent course of congenital syphilis protect against later neurosyphilis. A larger series is necessary. It is well established that, in males, a mild early syphilis predisposes to neurosyphilis. Possibly because of some immune reactions developed in the body in women, on the contrary, the factor of pregnancy in some way alters the defense mechanism so that the absence of early syphilitic lesions does not render the nervous system more susceptible.

Moore's fourth table of percentages of spinal fluid abnormalities compared with the number of pregnancies, while not conclusive, suggests interesting indications for further study. One might expect the highest percentage of abnormal fluids among the nonpregnant

women, and the next highest among the primiparas; but the interesting variation between the low percentages of those with two and four pregnancies, on the one hand, and the relatively higher percentages of those with three and five pregnancies, not only indicates the necessity for a larger number of cases to determine whether this will remain constant, but also that it must be determined what other factors may combine to disturb the regular biochemical reaction to pregnancy.

EMOTION

The relation of emotional states as a precipitating factor is but little understood. That they do bear some causal relationship is conceded by many, especially since their intimate connection with the various secretions and activities presided over by the sympathetic system have been established clinically as well as experimentally. There is also a long chain of evidence connecting emotional states with various endocrine activities; and the stability or instability of the emotions is frequently associated with different endocrine types. But we are still ignorant of the biochemical changes incident on these states, what part of metabolism is affected by prolonged anxiety or worry, for instance, and whether these changes occur as a result of disturbances of endocrine balance.

Puberty, one might say, is the first great commotional period of the organism. The individual becomes emotionally unstable, liable to uncertainty of mood, distractible, and the foundations for his future are often determined during this time. The gonads, the thyroid, etc., may become temporarily or permanently disorganized at this period of life; and if it is true that one of these organs may be greatly concerned in the mechanism by which the organism protects itself against bacterial invasion, it is quite within the realms of possibility that the disturbed function results in greatly lowered resistance to the pathogenic micro-organism, or possibly actually fosters its growth.

THE THYROID

Thus far the thyroid has appeared to play some part in the relationship of the organism to the growth of spirochetes. Stern, quoted by Pende, reports constant sclerosis of the thyroid in tabetic patients. Dr. W. H. Brown has informed me that extirpation of the thyroid has a definite effect on the rapidity of development of primary and secondary lesions on rabbits, one of which showed evidence of what might be termed involvement of the nervous system. The presence of masses of spirochetes on the suprarenal cortex might easily disturb gonad development just at puberty, thus creating a general imbalance which would allow the increased activity of the spirochete and even its affinity for the central nervous system.

WEIGHT OF ENDOCRINE GLANDS IN SYPHILIS

Brown[1] makes a contribution to our knowledge of biology, both normal and pathologic, the effect of which is to open up a great territory for future research and investigation. For the purpose of making a standard of control, careful observations were made on the weight of each endocrine gland in rabbits for every month. The weight of the gland was brought into relation with the body weight of the animal. The results show an interesting uniform variation of weight of each gland, especially during the period of seasonal change, such as the spring and the fall. A series of rabbits inoculated with syphilis was then subjected to similar investigation, and the results demonstrated a most impressive variation in weight corresponding to the seasonal changes in normal rabbits, which now, however, vary according to the stage of the disease. Immediately after inoculation, there is a fall in weight of each endocrine gland, which rises during the height of the primary lesion, and sinks at the end of this stage, to rise still higher during the period of greatest activity of the secondary lesion, becoming constant during the latent period that follows this stage. Although this is merely the preliminary communication of a most important series of studies on the subject, it will readily be seen that it at once establishes experimentally a relationship between the endocrine system and the activities of a pathogenic organism which not only confirms a great many clinical observations, but may serve as an important method for which the relative importance of each gland may be demonstrated.

1. Brown, W. H.: J. Exper. Biol., to be published.

REACTION TO TOXINS

There are factors in the production of neurosyphilitic lesions other than the endocrine disturbances referred to elsewhere. They consist in mass reactions of the individual to certain toxic properties in the blood which serve as exciting agents. Whether they act directly by breaking down the resisting or antitoxic properties of the individual cells, whether they foster the rapid growth of the spirochete or augment these toxic properties of their secretion, whether by some subtle biochemical mechanism they act indirectly through the endocrine, sympathetic system, we are unable to say. We know too little of the life reactions and history of the micro-organism to do more than speculate on what takes place. We do know, however, that, just as emotional disturbances, trauma or the advent of sexual maturity act as exciting causes in the appearance of neurosyphilis, severe infections and what one might term massive shock reaction may have a similar effect.

A group of four children born of a syphilitic mother and a nonsyphilitic father illustrate very well the result of what might be termed severe protein shock reaction.

The group consists of two boys and two girls, aged 14, 8, 6 and 2 years, respectively. The oldest, a boy of 14, we were unable to examine because it was impossible for the mother to bring him to the clinic. His history was that of delayed dentition and development, and gastro-intestinal disturbances. At 6 years, he began to exhibit gait disturbances, which progressed fairly rapidly and were accompanied by mental deterioration and severe vomiting attacks.

The second, a girl of 8, was born normally but developed slowly in dentition and learning to walk and talk. She had measles and mumps at 5, and mild pertussis at 6. She presented the picture of severe spastic diplegia with mental retardation and emotional instability. Examination revealed the pupils rigid to light and in accommodation; left facial paresis; constant drooling; deviation of the tongue to the left; absence of dysphagia; explosive speech; stuttering; spasticity of the arms; ataxia; partial contracture of the left biceps, and markedly exaggerated tendon reflexes of the flexors of the left wrist; abdominal reflexes upper and lower, left less than right; gait of the scissors type with abductor spasm; inability to take more than a step alone; partial contracture of both quadriceps groups and both Achilles tendons; beginning equinovalgus of the left foot; great exaggeration of the knee jerks; double ankle clonus; double Babinski and Oppenheim reflexes; loss of postural sense in the toes; undisturbed cutaneous sensibility, as far as could be determined, in view of the poor cooperation afforded by the child's mental state; incontinence of urine but not of feces. The mental picture was one of definite deterioration.

The serum Wassermann reaction was four plus; cerebrospinal fluid Wassermann reaction, positive; cells, 14; globulin, positive; Fehling's test positive.

The third child, aged 6, was somewhat slow in dentition, had measles, mumps and pertussis, and suffered from frequent mild febrile attacks. There were no convulsions or digestive disturbances, and no mental changes. She seemed a normal, bright, good tempered child, with normal intelligence and emotional make-up. All cranial nerves were normal. The pupils were normal. The teeth were decayed and widely spaced; they were not hutchinsonian. The arms, and the reflexes, abdominal and epigastric, were normal. The knee jerks were active and equal. The ankle jerks on the right were present; on the left, not obtained.

The serum Wassermann reaction was one plus. Puncture was not permitted.

The fourth child, aged 2 years, appeared perfectly normal, physically and mentally. There were neither signs of neurosyphilis nor stigmas of congenital syphilis in the teeth and bony frame, but the serum could not be obtained because of the small size of the veins.

As near as it is possible to ascertain, the older two children developed slowly but otherwise gave no evidence of syphilitic infection until their sixth year. Shortly after this period, both children began to exhibit the first evidences of the disease in the form of gait disturbances, which progressed with the rapidity indicated in the histories. The fact that, in both instances, evidences of syphilis of the nervous system began at the same time of life was interesting enough to warrant investigation. Careful inquiry disclosed that each child, although sustaining measles, mumps and pertussis successfully, had at this time been subjected to vaccination, and had reacted quite severely with a high temperature, prostration and vomiting, although the local sore was small. A few months after this the signs of neurosyphilis became apparent.

Thus far very little has been published concerning metabolism of syphilitic patients, and the little knowledge that we possess seems to shed practically no light on the subject.

Cedarkreutz, in 1902, employing the methods in vogue at that time, found little toxic destruction of protein in syphilis, although it may be present when there is fever.

Tileston and Comfort, and Schwartz and McGill found no change in the blood urea, although some patients with tertiary lesions may exhibit figures considerably above normal.

LIPOIDS

The lipoids, on the contrary, furnish the most fruitful field for research, both experimental and pathologic. The existence of complex lipoid substances in nervous tissue in the gross has been demonstrated by Levene, but we are still ignorant of the normal amounts of these substances in the various structures of the nervous system. We do not know the amounts or the proportions necessary for the healthy normal preservation of nerve tissue, or what part a variation of these proportions may play in the capacity of the tissue to break down and disintegrate as in myelin degeneration, or to resist destruction. Their importance is indicated in the table of Koch, who places cholesterols and the phosphatids in equal proportion to the protein substances of the adult brain, and in the fact that the difference in cerebrosids—nitrogenous substances free from phosphorus—are determined by the fatty acid they contain.

W. and M. L. Koch have made interesting studies on the lipoid changes occurring during the growth of white rats. They find a diminution in the relative percentage of proteins in the total solids due to the formation of a large amount of lipoid matter. The lipoids which appear coincident with medullation and whose development is *pari passu* with medullation are the cerebrosids and the phosphatids. There is a great outburst of phosphatid formation at the very beginning of medullation. The phosphatids are present, therefore, in the cells as well as the sheaths.

There is certain evidence that the lipoids of other body tissues vary greatly in disease states, although our knowledge of the finer changes and the meaning of these changes is still very meager and confined to mere speculation. Bloor has demonstrated the cholesterol lecithin and fatty acid variation in the blood plasma and cells in diabetes, pernicious anemia and uremia.

In acute septic conditions, infections or intoxications, the anisotropic lipoids disappear from the suprarenal cortex. In chronic infection, anemias and severe hemorrhages they also disappear, but at a much slower rate, whereas in chronic circulatory disturbances they are increased. Their disappearance from the suprarenal cortex is generally interpreted to mean a passage into the blood by means of the endothelial leukocytes of this layer.

Pfeiffer also achieved the same result experimentally in cases of artificially produced protein intoxication. He demonstrated that, after scalding or the injection of photodynamic substances with subsequent exposure to light, the lipoid and chromophil substances are greatly reduced. The same changes were also noted in the suprarenals of the uninjured animal when the experiment was repeated parabiotically, and he suggests that the lipoids are mobilized in the blood in order to neutralize excessive proteolytic enzymes set free by the primary intoxication.

In regard to syphilitic infection there is a definite amount of evidence to connect certain of its reactions with the lipoids. In the first place, the antihemolytic properties of cholesterol are well known, and, secondly, the Wassermann reaction is undoubtedly dependent on the presence of certain lipoidal substances.

Kolmer, in a recent article commenting on infection with the spirochetes of yaws and of syphilis, says that a substance called reagin by Neisser is elaborated. It has the property of uniting or reacting with certain lipoidal substances, and the resulting complex, regarded as a precipitate by some investigators, is able to absorb or fix hemolytic complement in the test tube. Kolmer believes it is the product of the cells of all tissues, including the cardiovascular system as well as leukocytes and other inflammatory cells surrounding spirochetes, and that through possible antigenic properties of the lipoids or spirochetes the production of reagin is induced, although there are no valid reasons for regarding it as a true antibody. On the contrary, its capacity to fix complement in the presence of a suitable suspension of lipoids, as well as any complement fixation, is to be regarded as an index of the degree of infection rather than of immunity. Kolmer does not believe that it is a lipoid or is identified with the lipoid content of either the serum or the fluid, but admits that its actual composition is still unknown.

Consideration of the cases presented shows how spirochetal infection, which has hitherto been latent in the individual, may under proper provocation overwhelm him so that he rapidly becomes incapacitated and soon deteriorates at a rate that is astounding. In a few months, whether it be under stress of combined emotional shock and puberty or a protein shock before puberty, individuals who have heretofore appeared quite normal develop signs of neurosyphilis that progress as rapidly as the fulminating type of the acquired forms.

The causes of this peculiarity are not much nearer a true explanation than when the facts were first noted. Time alone as a factor, or variations in virulence of the strain, have little value because a great many young children, often of the same stock and infected by the same strain, as in the case of the general paralytic boy, succumb at an early date to the infection, or give evidence of gross lesions if the spirochetes are actually present in large numbers in the tissues. As far as we know, the only organs in which larger masses of spirochetes may exist without specific lesions are the endocrine glands.

The time element can be considered a factor only if one postulates the presence of small numbers of spirochetes in the blood that are held in check by sufficient resistance on the part of the individual through antibodies or other immunizing agents until they are either gradually eliminated, or else through some such factors as mentioned above they suddenly overcome the resistance, multiply with great activity, and overwhelm the individual. If by the time element it was merely meant that the organism was slowly increasing in numbers in the various structures of the host until the presence of an actual lesion became clinically manifest, it would be possible to trace the development step by step, as it were, from the history and direct observation of each case. There is great likelihood that this actually does occur in the case of congenital lesions of the cardiovascular apparatus; but the process is hardly to be considered latent in the strict sense, because all lesions of these structures are apt to develop insidiously and become apparent long after relatively gross changes have become well established. Furthermore, the structure of the vessels, the primary infiltration in the vasa vasorum, which may last a long time before the effect on the walls of the large vessels is felt, and the fact that the organism, whose virulence is still a matter of dispute, are in a constantly moving medium are the chief factors in the development of lesions of the vascular system.

There can be little doubt that the ductless glands may play an important rôle in the late development of these lesions. The evidence at hand is too significant to be disregarded, although it is not exact enough to establish with sufficient detail their exact part in the process.

The constant appearance of structural variations of different types in syphilitic offspring are referable to disturbed function of these organs. Again granting the influence of the suprarenals on gonadal development, it can readily be seen how the former, containing large numbers of spirochetes, may suffer just enough functional disturbance to interfere either with the proper functional or with the structural development of the latter. It is quite possible that the association of infantilism with juvenile tabes or general paralysis is to be explained in this manner, although the intimate connection with the neurosyphilitic features are still quite obscure. In other words, there is no evidence that might explain syphilitic lesions of the nervous system through disturbed gonad function, even though Moore's table of the influence of pregnancy on neurosyphilis is very significant, and carries fruitful suggestions for further research.

The myxedematous type of infantilism demonstrates that the thyroid may also be concerned in this group; and, though positive evidence of direct connection of this gland with the development of neurosyphilis is lacking, the constant association of sclerotic changes in the thyroids of tabetic patients must have some significance, however indirect it may be.

The whole endocrine system certainly becomes involved in great emotional disturbances; and if these occur during puberty, whether it be early or late, a trauma of the entire nervous system occurs, which consists not only of circulatory changes but probably of some type of molecular change in the cells as well. Just as local trauma to the skin, mucous membranes or periosteum will cause sudden activity of latent spirochetes, and a gumma or other tertiary lesion develops, in like manner emotional disturbances produce similar reactions in the tissues of the nervous system. It may be that the biochemical balance is disturbed, either among the lipoids alone or between the lipoids and the protein constituents of the cells. In any event, something occurs which mobilizes, as it were, the destructive effect of spirochetal activity in the central nervous system. Whether the gonads are more involved in the paretic type and the thyroid in the juvenile type is still undetermined, and constitutes one of the problems on which we are now at work.

While our knowledge of the part played by the lipoids, thus far, is limited to the results of the reaction of the organism, I do not believe that there is sufficient evidence to say positively that they may not have something to do with the process of maintaining the capacity of the cells to resist spirochetal invasion. It is fairly well established, to be sure, that the Wassermann reaction is closely connected with the lipoids; indeed, if Kolmer is correct, it is their capacity to unite with reagin that produces the precipitate which is able to fix hemolytic complement in the test tube. As he says, it is to be regarded as an index of the degree of infection rather than an index of immunity. On the other hand, the fact that women who undergo several pregnancies are less liable to neurosyphilitic lesions than primiparas or sterile women, when considered with the fact that cholesterol is constantly found increased in the blood of pregnant women, immediately assumes a significance quite apart from the severity of the infection and brings up the question whether or not some of the lipoids may not have immunizing properties.

Lecithin also may have an important part in this reaction, through its abilty to combine with other substances. Its capacity to combine with compounds of heavy metallic salts and organic substances, such as toxins or other protein substances, is well established, and it might easily combine either with toxins elaborated within the body during infections, or other toxic proteins, as in the two cases of vaccination, and, through an unfavorable influence on nervous tissue, might effect a loss of the capacity to hold spirochetal activity in check.

Whether or not the various fatty acid combinations take part in this reaction is most obscure; and, aside from their presence and their importance in determining the identity of some of the lipoids, such as the cerebrosids, very little is known.

One cannot avoid the feeling, however, that the whole or part of the lipoidal group is an important factor in the subtle biochemical changes whereby tissue, which for years holds spirochetal activity in check, under unfavorable influences, such as trauma, emotional disturbances, stormy puberty or the presence of toxic substances, rapidly loses the capacity to withstand the invasion and permits the development of these lesions.

Finally, it would appear that the development of neurosyphilis depends more on the capacity of the individual to overcome or resist the activity of the spirochete than on a variation in virulence of the strain.

OCULAR DISTURBANCES IN PREGNANCY AND DURING THE PUERPERIUM *

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During pregnancy, numerous changes are manifest in the eyes and their adnexa that are normal to the state and disappear with its termination. Not infrequently, however, disturbances of vision arise in the course of gestation and during the puerperium which are danger signals of the greatest importance. These visual disturbances may be the first indication of the gravest danger to the life of the woman, or the first symptoms of disease of the various ocular structures which may terminate in diminished vision or even blindness.

All the elements necessary for the growth of the fetus and for the promotion of its metabolic activity are derived from the maternal body, which must also take care of the waste products arising from the increasing cell activity. While the pregnant state is a physiologic condition, there is, nevertheless, an enormous demand made on the reserve material of the maternal body. In addition, there is the mechanical interference with bodily functions due to pressure disturbances.

The increased demand on the reserve material of the pregnant woman is bound, under all circumstances, to diminish the resistance of the body to all injurious influences, autogenous or ectogenous. Thus, in any organ of the body in which there exists some abnormality, or in which there is present, at the time of conception, some morbid process, the chances for pathologic changes to take place or to increase are greatly enhanced by the generally lowered bodily resistance. Further, the general lowered resistance cannot successfully combat the effects of foci of infection that may be active in the body, which may act as the exciting factors in lighting up morbid processes in any organ, the eye not excepted.

The early recognition of ocular disturbances during gestation is of great importance, as they frequently are warnings of marked systemic changes that menace not only the eyesight of the woman, but possibly her life.

Increased deposit of pigment in the rete mucosum of the lids, as well as in other parts of the body, is frequently noticed. These chloasmata uterina consequent on the destruction of a large number of red blood corpuscles usually disappear after delivery, depending on the depth and extent of the pigmentation. In patients with marked chloasmata, examination of the blood is indicated, as well as determination of whether activity of the kidneys is diminished.

Occasionally, the secretion of tears is increased from the third month on to term, and is quite annoying. This is frequently accompanied by increased secretion from the salivary glands. Usually, in these cases, the lacrimal and salivary glands are swollen. Subconjunctival hemorrhages, if frequent and large in amount, indicate some cardiovascular change, and should be regarded as danger signals. They may be early signs of a grave toxemia.

The phlyctenular inflammations of cornea and conjunctiva which occasionally occur during pregnancy are not peculiar to the condition and will not be dwelt on.

Ulcers of the cornea are not frequent in pregnancy, but develop from the usual causes, i. e., injury and infection. Softening of the cornea, keratomalacia, occasionally develops in subjects very much enfeebled by pernicious vomiting and dyscrasias.

Conical cornea is said to have developed in pregnancy, and to have its origin during the stress at delivery. Any previously existing weakness of the intrinsic and extrinsic ocular muscles may be aggravated, especially if the general physical condition has become below par as the result of nausea and vomiting. As a result of reflex disturbance through the sympathetic nervous system, miosis or mydriasis may be in evidence.

Cycloplegia may appear during the latter half of pregnancy, the result of insufficient innervation of accommodation, and is most annoying.

Polyopia may develop in the early months, and is usually one of the manifestations of an hysterical condition. Yet hysteria should be the last condition thought of in any case of pregnancy.

External and internal squint is occasionally present, especially in those with unstable muscle balance, and is most difficult to relieve, owing to the irregularity of the manifestations of the strabismus.

Intercurrent iritis or cyclitis is dependent on preexisting causes, systemic infections or toxemias generated by the pregnant state. The formation of cataract has always been considered as due to preexisting disease. Vitreous hemorrhages occur frequently, causing great alarm. As a rule, however, there is complete absorption with no loss of vision.

RETINITIS AND NEPHRITIS

The ocular disturbances liable to complicate pregnancy are classified by Woods as: (1) the sudden amaurosis usually called uremic; (2) the retinal changes spoken of as albuminuric retinitis of pregnancy; (3) loss of vision in some parts of the visual field without retinal lesion, sometimes with pallor of the disk, and (4) neuroretinitis not resembling that called albuminuric.

"It is now accepted that the eclampsia of pregnancy is not uremic in origin but is allied to pernicious vomiting which is caused by the circulation of toxic substances in the blood." So the amaurosis of eclampsia is believed to be due to a sudden toxic saturation of the optic nerve and retina, retinal changes being absent because of insufficient time for them to develop. This view is supported by the fact that optic atrophy sometimes follows uremic amaurosis.

The term albuminuric retinitis of pregnancy has been superseded by retinitis of pregnancy. "So far as they occur together, retinitis of pregnancy and albuminuria may be disassociated, for it is a patent fact that either may and frequently does exist without the other. Therefore, an albumin-free urine need not rule out a diagnosis of toxic retinitis in a pregnant woman."

Retinitis of pregnancy is a rare occurrence, being found, according to Silex, but once in from 3,000 to 4,000 pregnancies; while albuminuria during gestation is not uncommon, varying from 2 to 20 per cent. (and retinitis is found in albuminuria once in forty-five cases).

The retinal disturbance is not considered to be a form of albuminuric retinitis, although the true albuminuric retinitis may develop during pregnancy from a preexisting chronic nephritis; nor is the

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nephritis of pregnancy a true inflammation. Both the retinitis and the nephritis are undoubtedly dependent on the same cause, a toxemia. What the nature of this poison is has not been fully settled, but progress has been made. At least a name has been attached to the toxins, viz., syncytiotoxins, by which is meant the products of the disintergration of the syncytial cells. These are described as the outer of two layers of cells of fetal origin, which form part of the developing placenta and lie next to the maternal mucosa. They are so named from their immediately connecting the fetal and maternal structures. Their origin and function are physiologic; and, when their purpose is served, their death is, likewise. One might say the formation of toxins in one's body is a physiologic process. It is not the formation, but the failure of proper elimination of toxins, which acts deleteriously on the economy.

The ophthalmoscopic signs of the retinitis may not differ from those associated with other forms of nephritis. In general terms, there is a widespread neuroretinitis with exudation and hemorrhage. The retinitis is toxic rather than vascular in origin, although gross endarteritis with obliteration in the choroidal vessels and in the posterior ciliary as well as the retinal vessels has been found. The findings in the majority of cases have been such as to allow us reasonably to suppose that the vascular changes that take place in pregnancy and in the nephritis are of a temporary nature. Perhaps in half of the eclamptic cases, the patients complain of disturbances of vision, but decidedly few will show evidences of retinitis, and among these the star figures are rarely found.

In the retinitis of pregnancy, the prognosis, so far as it concerns the vision and life of the patient, depends on the duration of the gestation. If the visual disturbances appear during the first six months, usually the pregnancy should be terminated if the sight is to be saved. It must be borne in mind that any serious eye lesions may be made worse by a subsequent pregnancy.

Chronic nephritis and retinitis caused by it form sufficient indications for the termination of the pregnancy, as the patient may recover entirely from the nephritis, or at least be greatly improved. The induction of labor, therefore, has been recommended as a therapeutic measure, because with the termination of pregnancy the inflammatory deposits in the retina may be absorbed and good vision be restored, provided the process has not continued so long that secondary changes have taken place.

In general, it may be said that retinal hemorrhages usually indicate a grave toxemia.

If, when the hemorrhages are over the macula, and the optic nerve is involved, the symptoms are not heeded, during which time the toxemia becomes increased, a permanent impairment of vision is inevitable. The life, future health and vision of the woman are, therefore, best safeguarded by an interruption of the pregnancy. Usually, the vision improves rapidly after delivery, and the exudation and hemorrhages become absorbed to a large extent, although in extensive effusions a certain amount of permanent impairment is usual.

The prognosis as regards sight in these cases is probably not so good as is commonly thought, though as regards life it is much better than in the nephritis of the nonpregnant. Sight, however, never improves until the pregnancy is terminated. Without the induction of labor, the prognosis is most serious. Cases which go on to term show the largest proportion (15 per cent.) of deaths, and the greatest damage to sight. Spontaneous premature delivery shows 11 per cent. of deaths, while after the artificial delivery, the mortality is but 4 per cent.

Silex found a return to normal vision in only three cases out of thirty-five. Therefore, only moderate vision can be anticipated if labor is induced at the seventh or eighth month of pregnancy. Accordingly, in the last two months, ocular symptoms are to be weighed with other findings. Usually, partial optic atrophy is present with white or pigmented spots at the macula. Fortunately, recovery follows in the majority of the cases in which visual disturbances have not come on until the last two or three weeks.

A true optic neuritis, that is, papilledema, is not infrequently found associated with the toxemia of pregnancy. In such instances, the relations of the optic nerves to the pituitary body must not be overlooked, and because that structure is so frequently affected in the course of pregnancy, it should be borne in mind that pressure on the nerve may arrive from swelling of the hypopysis.

DETACHMENT OF RETINA

Detachment of the retina is one of the unusual ocular complications of pregnancy and of the puerperium, arising from the strain of prolonged and difficult labor; it occurs more frequently in the course of retinitis of the pregnant than in the retinitis of the nonpregnant woman. In certain of the cases reported, myopia had already existed, a condition that should always be considered as well as the effects of the stress of the puerperium, because stress in the susceptible can be sufficient to cause detachment. Bilateral detachment of the retina has occurred, but, in some fortunate cases, the membranes became reattached, although optic atrophy supervened.

From the cases reported, the chances of recovery of perfect vision after detachment of the retina during pregnancy, labor or in the puerperium seem to be better than in the nonpuerperal state. The induction of labor, therefore, may favor the reattachment.

EMBOLISM OF RETINAL ARTERY

It is well known that distinct modification of the cardiovascular system occurs during pregnancy, and that the constitution of the blood is changed, comprising an initial reduction followed by increase in amount of fibrous elements; and it is marked by variations in the blood pressure during the last three months. Numerous cases of what has been considered to be embolism of the central artery have been reported, for which affection no other cause than the general blood changes could be assigned. Merely a branch, as the superior temporal, may become affected, so that only the portions above the macula become ischemic with the consequent defects in the lower portions of the field and a reduction of the general visual acuity. The value of the cilioretinal vessels in supplying the ischemic area is here fully shown. Occasionally, the vision may be greatly regained owing to the restoration of the lumen.

OBSERVATIONS AT CHRISTIANIA CLINIC

In the Christiania clinic, eye examinations were made by Schiötz[1] on all pregnant patients with subjective eye disturbances, on those with pregnant toxicosis and

1. Schiötz: Monatsbl. f. Augenh. 66:301, 1921.

on most patients who showed more than ordinary confinement albumin. During five years, 680 patients were examined; 158 cases of eclampsia occurred during that time. Among his patients with no albumin and no symptoms of intoxication were found two cases of hemorrhage into the vitreous, one of embolism of a branch of the central artery, one of recrudescence of old chorioretinitis, one of keratitis superficialis, one of keratitis disciformis, two of retinal detachment in excessive myopia, three with old fundus changes, one of transitory myopia during pregnancy, and two of retrobulbar neuritis in hyperemesis gravidarum.

Forty cases of pregnancy retinitis were observed; of these, ten patients had chronic nephritis before and after the pregnancy; seventeen were healthy before, but showed nephritis after, the pregnancy; six were free of symptoms before and after pregnancy, and in seven, the follow-up examination was missing, or the retinitis was not healed at the time of the report. Retinitis was found sixteen times in primiparas, and twenty-four in multiparas. The retinitis usually began in the second half of the pregnancy. Of the forty patients, fourteen had, in follow-up examinations, normal vision; all others, with the exception of one who was totally blind, had vision sufficient for work and for reading. This good vision is due to the active treatment, especially to the induction of labor. Most patients had nephritic symptoms before the pregnancy, while some seemed to have developed a chronic nephritis in consequence of the pregnancy kidney. In six cases, a pure pregnancy kidney seemed to have existed, the patients having no symptoms before or after the pregnancy; four of these patients subsequently became pregnant again.

EYE SYMPTOMS WITH ECLAMPSIA

Of the 132 patients with eclampsia, and twenty-six with threatening eclampsia, twenty-seven showed retinitis or papilloretinitis, four, complicated with detachment; one showed hemorrhagic retinitis, and three, detachment without retinitis; in two patients papillitis, in two edema of the retina, and in three chromatopsia was noticed. In all, 33 per cent. of the patients showed eye symptoms. During follow-up examination of twenty eclamptic patients, all were found perfectly well, free of albumin and with normal blood pressure. This contrasts greatly with the pregnancy retinitis cases; thirteen of these patients subsequently became pregnant.

FOCAL INFECTION

Since foci of infection in the paranasal sinuses, teeth and tonsils have been proved to be such active factors in the etiology of ocular disorders in apparently healthy persons, it is only reasonable to suppose that they would be increasingly dangerous as etiologic factors in the condition of lowered bodily resistance such as that induced by pregnancy.

In four cases of neuroretinitis of pregnancy with marked albuminuria and marked reduction of vision that have come under my observation, I found in each case extremely active infectious processes in the teeth and tonsils. Unfortunately, the damage to the eyes had already occurred, but improvement in the ocular condition, which in two cases was marked, and in the other two slight, did not take place until treatment was directed to the infected teeth and tonsils.

Would it not be wise, therefore, during gestation, in addition to the early frequent examinations of the urine which is practically always done, also to search for possible foci of infection, especially in the teeth, paranasal sinuses and tonsils, and correct morbid processes when found, rather than to run the risk of allowing the patient to proceed to term with the possibility of having to terminate the pregnancy in order to save life or preserve vision?

It is also suggested that visual examination should be made, as a routine procedure, during the latter months of pregnancy, with especial regard to the fundus and visual fields.

ABSTRACT OF DISCUSSION

DR. ALLEN GREENWOOD, Boston: Some observers have asserted that retinitis of pregnancy is not a true albuminuric retinitis. That is true, and, again, it is not true. There is in the pregnant woman a tendency to retinitis, in a few cases usually accompanied by albuminuric retinitis, from which the patient recovers with good vision and with a good prognosis, as a rule, as far as the eyes and kidneys are concerned; but there are women who become pregnant as a complication, one might say, of nephritis, a nephritis that has not been discovered and that has already produced changes in the fundus. Those two fundus pictures are quite different, in a way. The retinitis of the toxemia of pregnancy is a retinitis without excessive areas of degeneration. It is a retinitis of toxemia with inflammation of the optic nerve, papillitis, and edema of the retina, with some exudate and some disturbances of the circulation. In the retinitis of the albuminuric type occurring in pregnant women, there is more evidence of retinitis. In those cases there is every evidence of degeneration and destruction of the smaller vessels of the eye. In such cases the prognosis as to vision is bad. Dr. Black has also called attention to the possibility of separation of the retina. That is usually a bilateral separation, and, as a rule, is recovered from as soon as pregnancy is terminated, so that the prognosis is good. There is an accumulation of fluid between the retina and the choroid, and it is almost always in the dependent portion of the eye. Patients have recovered from that condition almost invariably, and it is virtually never necessary to operate for a replacement of the retina. Dr. Black has also called attention to cases of amaurosis with toxemia having a marked effect on the optic nerve without producing an actual papillitis. Those cases are less common than any of the other ocular manifestations of pregnancy. Recently, a great deal of attention has been paid by ophthalmologists to the effect of the pituitary enlargement that accompanies pregnancy. That enlargement, if it is of considerable size, is liable to produce a change in the field of vision such as is produced by other enlargements of the pituitary gland. Observers who have gone into this have demonstrated that the temporal field of vision becomes drawn in during the last months of pregnancy.

Ions.—Why certain solvents, such as water, should cause or permit the splitting of a compound into electrically charged bodies, called ions, has not yet been clearly explained. That they do has been demonstrated with reasonable certainty. A chemical element is conceived to be an aggregate of unit, negative, electrical charges (electrons) grouped at relatively enormous distances about a central, neutralizing nucleus of positive electricity. The numerical value of this nucleus, in terms of the number of electrons required for neutralization, and the geometrical configuration of the positions of the surrounding electrons are supposed to distinguish the several elements. Certain of the electrons are but weakly incorporated in the planet-like system of certain elements. When such an electron has escaped, the element is left with a unit excess of positive electricity. It is then a positive ion, a cation, having distinctive properties. If an element is so constituted that it can hold an extra electron, the extra charge gives it new characteristics. The negatively charged element is called an anion.—Clark: Determination of Hydrogen Ions, Baltimore, Williams and Wilkins Company, 1923.

A REVIEW OF A GROUP OF PROFESSIONAL DONORS *

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Statements in the literature concerning the subsequent condition of patients who have acted as donors are not accompanied by statistical data. Minot and Lee,[1] in their article on the transfusion of blood, state that several transfusions of 500 c.c. may be given by a single donor, at intervals of one week or more, without apparent disturbance. After 500 c.c. has been given, the donor will feel well within a few hours. A loss of 1,000 c.c. may cause lassitude for two or three days. The blood volume in normal persons is made up rapidly from the fluid reserve of the body, and the number of erythrocytes returns to normal within a few weeks. The inadvisability of using students and nurses as donors has been discussed in the *Lancet*[2] and in the *Guy's Hospital Gazette*.[3] It is rather surprising that, aside from these discussions, nothing has appeared in the literature on this subject.

In view of the lack of published information, it seemed necessary to collect data on a series of donors in order to determine, if possible, just what are the more remote effects of repeated donations. The immediate effects of loss of blood have been studied in detail by Keith [4] and others.

The list of donors at the Mayo Clinic includes about 1,000 persons who have been grouped, 200 of whom are on the active list, and may be called on at short notice. It was possible to make a personal study of eighty-four of these, who returned for this purpose at our request, and were accepted consecutively; therefore, the group is not a selected one, and includes donors who had given from one to thirty-five donations.

NUMBER AND FREQUENCY OF DONATIONS

One donor had given thirty-five donations; two, thirty-two donations; one, thirty donations; eight had given twenty-five donations or more; fifteen, twenty donations or more; twenty-four, fifteen donations or more, and thirty-five, two donations or more.

The frequency of donations varied to a considerable degree. The donor who had given thirty-five donations had been used on an average of once in six weeks over a period of more than four years. Another donor had given eleven transfusions in twelve months, or an average of one every four and one-half weeks. A third donor had given eleven donations in eight months, or one every three weeks. Twenty donors had given more than ten donations each, at an average interval of less than two months.

AGE AND SEX OF DONORS

The ages of the donors varied from 19 to 62 years. Only three were under 20 years of age, and these were 19. The majority of the donors were under 40 years, and the largest group was between 30 and 40 years. The distribution according to age is shown in the accompanying table.

There were fifty-one men and thirty-three women in the series observed.

WEIGHT OF DONORS

An inquiry into the gain and loss of weight following donations resulted in interesting findings. Of the eighty-four donors, there were data as to weight in seventy-three; of these, thirty-six had gained weight, thirty-two had remained the same, and five had lost weight. The group that gained in weight had given from one to thirty-two donations, the average being eleven. Nineteen donors, who had given from one to twenty-four donations, with an average of ten, had gained 10 pounds (4.5 kg.) or more; the average gain for this group of nineteen was 20 pounds (9 kg.). One donor, a man, had gained 60 pounds (27 kg.) after twenty-four donations; two others, 35 pounds (16 kg.), and a fourth, 30 pounds (13.5 kg.). One donor, after having given one donation, gained so much in weight that she decided not to act as donor again. Of those who had gained more than 10 pounds (4.5 kg.) in weight, seven were women and twelve were men. The average gain in the women was 19 pounds (8.6 kg.), and in the men, 16 pounds (7.3 kg.), excluding the man who had gained 60 pounds (27 kg.). The gain in weight in such a large proportion of donors is in striking contrast to loss of weight. Only two donors had lost 10 pounds (4.5 kg.) or more, and neither of these had lost more than 15 pounds (6.8 kg.).

Age of Donors

	Donors
19 years	3
From 20 to 30 years	23
From 30 to 40 years	33
From 40 to 50 years	19
From 50 to 60 years	5
More than 60 years	1
Total	84

It would be of value to determine whether the gain in weight after donations is due to a preponderant increase in fat rather than in muscle. This might be determined by a comparison of the blood volume for each kilogram, before and after the gain in weight, as the plasma volume for each kilogram is reduced in the obese. There is a noticeable improvement in the appetite after donations which may have a relationship to the increase in weight.

GENERAL CONDITIONS OF DONORS

It may be a significant fact that not one of these donors has shown any evidence of serious organic disease or of infection since the first donation. The general condition and feeling of general well-being of the donor corresponds quite closely with the gain in weight. Of the entire group of eighty-four, twenty-three (27 per cent.) voluntarily stated that they felt much better after they had begun to act as donors; forty-nine of the group felt neither better nor worse, and from the remainder a statement was not obtained. It is a striking fact, however, that none felt worse, or gave evidence of diminished vitality. It might be assumed that those who felt worse ceased to act as donors; but this does not apply to our series, as it included thirty-two donors who had given less than five transfusions, and

* From the Section on Medicine, Mayo Clinic.
* Read before the Section on Practice of Medicine at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Minot, G. R., and Lee, R. I.: Transfusion of Blood, Nelson Loose-Leaf Medicine, New York, Thomas Nelson and Sons **4**: 167.
2. Blood Donors, Lancet **2**: 1123, 1921.
3. Passim, Guy's Hosp. Gaz. **35**: 317, 1921.
4. Keith, N. M.: Blood Volume in Wound Shock, Special Report 26, Natl. Health Ins. Med. Res. Com., London, 1919, pp. 36-44; Blood Volume Changes in Wound Shock and Primary Hemorrhage, Special Report 27, 1919.

nine who had given only one each. Undoubtedly there is occasionally a person who feels that donations of blood are weakening, and it is difficult to determine whether this is entirely psychologic or not. Our group does not include donors under 19 years of age, and hence the conclusions may not apply to those of high school age. Aside from the question of health, it is not wise from a moral standpoint to allow boys to act as donors, as they are often tempted to spend, in exploits, money too easily obtained.

ANEMIA FOLLOWING DONATIONS

A group of twelve consecutive men and twelve consecutive women was compared with respect to the presence of anemia before and after their donations. The blood counts were as a rule made less than one month before donations were given, and more than three weeks after. In the men, the average hemoglobin content, by the Dare instrument, was 78 per cent. beforehand, and slightly more than 76 per cent. afterward. The average erythrocyte count before donations was 4,630,000, and after donation, 4,610,000. In other words, no anemia was evident in men after a single donation, or after a long series of donations. In the group of twelve women, the average hemoglobin before donation was 73 per cent., and after donation, 68 per cent. The average erythrocyte count before donation was 4,460,000, and after donation, 4,380,000.

In a series of twenty-two men and ten women, it was possible to obtain the estimations of hemoglobin after donations, by the Newcomer acid hematin method, and the average estimations for the men were 85.5 per cent., and for the women, 78.3 per cent. By the acid hematin method, 100 per cent. equals 16 mg. of hemoglobin per hundred cubic centimeters. This finding would, therefore, indicate a low normal for the men, and a definite anemia for the women.

A comparison of the hemoglobin in men and women shows that, before donations, the hemoglobin by the Dare method in women was, on an average, 5 per cent. lower than in men, and after donations averaged more than 8 per cent. less. The erythrocytes were not markedly reduced, but both the general averages and the study of individual cases demonstrate a greater tendency to anemia in women than in men, following donations. In certain women, a single donation reduced the hemoglobin very markedly, and, in one instance, the hemoglobin was appreciably decreased after each of a series of several donations given by the same woman.

Consideration in detail of anemia in women following transfusion disclosed the fact that twenty-two of the entire series of thirty-three women showed evidence of anemia of varying degrees. In a group of six women, the erythrocyte counts after donations were below 4,000,000 cells. The counts varied from 3,660,000 to 3,990,000. The shortest time after donation at which the estimation was made was fifty-seven days, so that a sufficient period had elapsed for complete recovery of cell volume. These six women were all married, and varied in age from 29 to 54 years; however, young unmarried women in the series have shown persistent anemia after even a single donation. On the other hand, an occasional woman has given large numbers of donations without any evidence of anemia.

Only four men of the entire series of fifty-one men became anemic.

The differential counts which were made before and after donations revealed nothing that was especially noteworthy. Anisocytosis and poikilocytosis were present in only two cases, and these were in women.

In all instances, reticulated cell counts were made, and no variation from the normal noted. However, as these counts were all made more than three weeks after a donation, normal reticulated cell counts may not have been present during the first three weeks. The platelets in the smears appeared to be normal in character and number.

Speculation concerning the reason for the development of slight anemia in women leads to the suspicion that it may be due to three factors: (1) the probability that the total mass of bone marrow devoted to the regeneration of blood is smaller in women than in men because of smaller stature and smaller bones; (2) the likelihood that the diet of men, including as it does a larger amount of meat, is more effective in blood regeneration, and (3) the fact that the habits and work of women are not conductive to blood regeneration.

BLOOD GROUPS AND CONDITION OF DONORS

Observations were made with respect to the blood grouping of the donors, according to the Moss classification. In Group 4 there were forty-four; in Group 2, thirty-two; in Group 3, six, and in Group 1, two. All of those who had given fifteen donations or more were in Group 4 and Group 2. One donor of Group 2 had given thirty-two donations; three donors of Group 4 had given thirty, thirty-two, and thirty-five donations, respectively; one donor of Group 3 had given ten donations, and another of Group 3 had given six donations. Of the six donors in Group 3, four were women, and two of these developed slight anemia after giving blood. Two donors in Group 1 showed no ill effects whatever. No relationship between the grouping and the condition of donors was evident.

A study of the blood grouping of donors in relation to the reactions in recipients was made in seventeen instances. One donor in Group 1 had given two donations, one of which was followed by a moderate reaction, and the other by no reaction whatever. Of those in Group 2, nine had given an average of seventeen donations; eleven reactions of mild and moderate grade ensued. Three of the donors in Group 3 had given nine donations, each; these were followed by five reactions, mostly of a mild grade. An average of ten donations had been given by four donors from Group 4, with only three reactions of mild grade. In this study of a small group with respect to reactions in recipients, it seems to be indicated that blood from donors in Group 4 has caused fewer reactions than the blood of other groups. These data refer to transfusion work for blood dyscrasias, the citrate method having been used. Reactions with the citrate method are extremely rare with posthemorrhagic and postoperative transfusions.

STUDIES CONCERNING BLOOD VOLUME

It has been established that, following the sudden loss of a quantity of blood, the plasma volume is rapidly restored to normal from the fluid reserve of the body. It is during this process, of course, that the evidence of anemia first appears in the peripheral circulation. The restoration of the cellular elements to normal is a slower procedure, and it probably takes about three weeks to bring the total red cell volume back to normal. It is for this reason that we have made our studies on donors at an interval of more than three weeks after the last donation of blood.

Blood volume estimations were made in five instances, all frequently used donors, in order to determine, if possible, whether there were any permanent changes in plasma or cell volume. The donors on whom these estimations were made had been used from nineteen to thirty-two times each. The estimations were made by the vital red method of Keith, Rowntree and Geraghty,[5] at a period of at least a month after the last donation of blood. Two women who had given twenty-five and twenty-nine donations, respectively, had moderate grades of secondary anemia. Both were obese, and had relatively low plasma volumes for each kilogram (40 and 41 c.c.), but no lower than would have been expected considering the degree of obesity. In two men who had given nineteen to thirty-two donotions, respectively, there was a slight elevation of the cell volumes in the hematocrit, and a slight diminution in the plasma volumes. The cell volumes in the hematocrit were 65 and 50 per cent., and the plasma volumes for each kilogram were 40 and 38 c.c. The blood counts, hemoglobin, smears and reticulated cell counts in these men were normal. In the fifth donor, a man, the hematocrit and plasma volumes, as well as the blood counts, were normal. There was, therefore, in this group of frequently used donors no marked, or apparently significant, change in the plasma and blood cell volumes as estimated by the vital red method.

HYPERTENSION AND DONATIONS

Seven donors with hypertension are included in the series of eighty-four. They had given from two to thirty-two donations, averaging thirteen. There is no evidence that hypertension is decreased by multiple donations; on the contrary, a slight, but probably not a significant, rise in blood pressure occurred in all of these donors. Moreover, a majority of those of the entire series who had normal blood pressures had a slight increase of blood pressure following multiple donations.

GENERAL CONSIDERATIONS CONCERNING DONORS

Familial Considerations.—The familial occurrence of pernicious anemia is too frequent to be coincidental. The question therefore arises whether or not the child of a patient with pernicious anemia should act as donor. It cannot be answered with certainty. We have concluded, however, from our experience with donors in general, that the child of a patient with pernicious anemia, provided he passes a satisfactory examination, including a complete blood count, is more likely to be benefited than harmed by acting as donor. However, the brothers and sisters of patients with pernicious anemia should be examined with special care for symptoms of incipient pernicious anemia before they are utilized as donors, because they are likely to be at an age when pernicious anemia may already be present. We have seen two patients with incipient pernicious anemia, who had acted as donors, develop an exacerbation of their symptoms and a rapidly developing anemia afterward.

Patients with Polycythemia as Donors.—Three patients with polycythemia vera have been used as donors. They seem to be neither more nor less effective as donors than normal persons. Their symptoms are usually relieved temporarily by the loss of blood. Care must be taken not to traumatize the veins of polycythemic patients because of the likelihood of producing thrombosis, and their use as routine donors is not to be recommended.

The Routine Examination of Donors.—It is our routine to examine donors with care before placing them on the list. A history is obtained, and a general physical examination, a Wassermann test, urinalysis and a complete blood count, are made. The Wassermann test, the blood count, and a general survey of the donors are repeated every six months. Inquiry concerning their social status and social habits is also made, and frequent Wassermann tests are done when indicated. This careful attention to donors is doubtless a factor in their good condition even after having given many donations. It is most important from all standpoints, and is regarded as a necessity.

The eligibility of each donor is decided individually, but a hemoglobin of at least 70 per cent. and an erythrocyte count of 4,250,000 with negative differential are regarded as prerequisites.

It is important that donors receive careful treatment and due consideration. One sore arm, or an incision to a vein, noticeably diminishes the number of applicants.

SUMMARY AND CONCLUSIONS

The remote effects of donations of blood on donors have not been discussed in the literature. Out of more than 200 donors "on call" at the Mayo Clinic, a consecutive series of eighty-four were available for personal study concerning their condition three weeks or longer after donations, and these conclusions were drawn:

1. Multiple donations of 500 c.c., when given at intervals of four or five weeks, have not been found to be harmful.

2. Women who have acted as donors often develop a definite anemia, and are slower than men to recover their cell volume and hemoglobin. Sixty-six per cent. of the women of the series had slight anemia.

3. Twenty-seven per cent. of the donors felt definitely better after multiple donations than they had before, and the general health had deteriorated in none of them.

4. Fifty per cent. had gained in weight, and only a few of the series had lost in weight. Nineteen had gained more than 10 pounds (4.5 kg.), with an average gain of 20 pounds (9 kg.).

5. A study of the blood volume in five donors, more than three weeks after donation, revealed no significant changes in plasma volume or cell volume.

6. Seven patients with hypertension had no reduction of blood pressure following multiple donations. Many of those with normal blood pressures, and several of those with hypertension had a slight elevation of blood pressure following multiple donations.

7. The history of prospective donors should be taken as a routine, and they should be subjected to physical examinations, including the Wassermann test and complete blood count, before they are placed on the list of approved donors. An inquiry into the social habits of the donor is very important. Moreover, a general survey of the donor's condition, and a repetition of the Wassermann test and blood count should be made every six months; Wassermann tests should be obtained more frequently when indicated.

8. More detailed information concerning the remote effects of donations is desirable, and may prove to be important from a physiologic standpoint.

5. Keith, N. M.; Rowntree, L. G., and Geraghty, J. T.: A Method for Determination of Plasma and Blood Volume, Arch. Int. Med. 16: 547-576 (Oct.) 1915.

ABSTRACT OF DISCUSSION

DR. E. H. FALCONER, San Francisco: This paper deals not so much with actual disease as it does with physiology, and it is very important to understand physiology if we are to understand disease. The physiology of bone marrow, unfortunately, is not very well known. Bone marrow is a very delicate organ and has very delicate functions to perform. It is estimated that there are twenty-five trillion corpuscles in a normal man weighing 60 kg., and that about 10 per cent. of this number are destroyed and replaced each twenty-four hours. It is evident that the bone marrow has enormous powers of regeneration in order to keep the blood stream filled with the essential number of corpuscles. And it is possible, as Dr. Giffin has shown in his paper, to withdraw great amounts of blood from the circulation without particularly reducing the amount required for the daily needs of the body. However, repeated small blood losses probably throw a great strain, a deleterious strain, on the bone marrow. Taking a careful history from prospective donors is important, as there are, undoubtedly, persons with a congenital weakness of the bone marrow. They do not stand blood losses well. It is important to ascertain whether the prospective donor has had previous periods of anemia. I had one patient who acted as a donor for her sister, who was ill with pernicious anemia, nine times in a period of about ten months. From 300 to 500 c.c. of blood was withdrawn each time. This woman told me that she had been anemic in her girlhood, but had entirely outgrown it. At the time, I overlooked this point, thinking it of no importance, but the woman developed secondary anemia which laster for almost a year. During this period, the menses ceased. The question of increase of weight after giving blood is interesting, and is rather difficult to explain, except that the loss of cells, which act as oxygen carriers from the blood stream, and the fact that immature cells absorb more oxygen than old cells, may tend to suboxidation of the tissues and the storing of fat. The immature cells absorb more oxygen, but possibly do not give it up so readily as do the more mature cells. It would be interesting to know just how long it takes bone marrow to return to normal after the loss of, say, 500 c.c. of blood, and after repeated blood losses.

DR. WALTER V. BREM, Los Angeles: We have been giving blood transfusions for about twelve years. In that time we have given more than 2,000 transfusions and we have not had any difficulty from our donors feeling untoward effects. Our routine has been to use them at intervals not shorter than three months; but we do not adhere to this routine, and sometimes we use them after a few weeks' time. We find that their blood cells, after giving about 500 c.c. of blood, return to normal within a week's time. The hemoglobin, of course, recovers less quickly. Five hundred cubic centimeters of blood is not a great deal to lose, and this is immediately made up, in volume, by the tissue juices, and the red blood corpuscles and hemoglobin come rapidly back to normal. We find frequently, as has Dr. Giffin, that the donors feel better after having given blood. There is one point in connection with the Wassermann test with which I disagree. Dr. Giffin recommended that the test be repeated every six months. That is not sufficient in our community, as we have found to our sorrow. We have, unfortunately, transmitted syphilis to two patients with pernicious anemia from donors whose Wassermann test was negative four or five weeks previously. In another instance, we had made a Wassermann test in taking the history of the donor, and within two weeks he came in to act as a donor, and told us that he had a slight lesion on the penis. When we investigated, we found that the lesion was an early chancre and full of spirochetes. We know of a case in which the son of a pernicious anemia patient did not reveal that he had a slight sore at the time that he gave his blood, and his father got a virulent attack of syphilis from the transfusion. This chancre was only five days old. So that we have to review our donors every time we use them to see whether anything has happened, and make Wassermann tests frequently.

DR. H. Z. GIFFIN, Rochester, Minn.: There is, as Dr. Falconer has stated, no *a priori* reason why the loss of 500 c.c. of blood should be deleterious. It is, however, rather peculiar that repeated daily losses of a small amount of blood over a long period of time may cause a very severe anemia, whereas a periodic loss of 500 c.c. of blood usually causes no anemia. I should like to emphasize, as Dr. Brem has already done, the importance of inquiring into the social habits of donors. One cannot be too careful in conducting repeated surveys of donors, especially of those whose social status is questionable. In answer to the question concerning the reticulated cell count: Our cases, which were all studied three or more weeks following donation, showed no increase or reduction in the number of reticulated cells, and no change in the differential count.

SOME OF THE CAUSAL FACTORS IN THE INCREASED HEIGHT OF COLLEGE WOMEN

THIRD NOTE

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College women during the last three decades have increased in size. The studies [1] made at Stanford University of 4,170 women students who entered during a period of thirty years show at the time of admission not only an increase in weight but also an increase

TABLE 1.—*Height of 21,383 College Women by Years* *

College Year	Stanford University		Smith College		Vassar College		Stanford, Smith and Vassar Combined (21,383)	
	No. of Women	Average Height, Inches	No. of Women	Average Height, Inches	No. of Women	Average Height, Inches	No. of Women	Average Height, Inches
1884-1885	...	....	...	....	30	63.5	...	....
1885-1886	...	....	...	....	39	62.8	...	....
1886-1887	...	....	...	....	31	62.5	...	....
1887-1888	...	....	...	....	44	63.5	...	....
1888-1889	...	....	...	....	52	62.9	...	....
1889-1890	...	....	...	....	59	63.4	...	....
1890-1891	...	....	...	....	34	62.4	...	....
1891-1892	94	62.4	...	....	113	63.1	207	62.8
1892-1893	91	63.2	...	....	127	63.0	218	63.1
1893-1894	89	62.9	...	....	129	63.1	218	63.0
1894-1895	174	63.3	...	....	205	63.4	379	63.4
1895-1896	108	63.0	...	....	146	63.0	254	63.0
1896-1897	127	63.4	...	....	164	63.5	291	63.4
1897-1898	124	63.2	...	....	201	63.5	325	63.4
1898-1899	174	63.2	...	....	185	63.5	359	63.4
1899-1900	117	63.5	300	63.2	218	63.6	635	63.4
1900-1901	118	63.4	335	63.6	222	63.8	675	63.6
1901-1902	104	63.8	392	63.5	290	63.9	658	63.7
1902-1903	150	63.8	309	63.6	320	63.7	679	63.7
1903-1904	102	64.9	307	63.7	307	64.2	616	64.2
1904-1905	39	62.9	403	63.3	247	64.0	689	63.4
1905-1906	78	63.5	408	63.6	308	63.8	792	63.6
1906-1907	156	63.8	409	63.0	160	63.9	787	63.6
1907-1908	180	63.6	445	63.2	295	63.8	920	63.5
1908-1909	63	62.5	494	60.9	386	64.2	843	62.9
1909-1910	133	62.9	501	63.4	380	64.2	894	63.8
1910-1911	196	63.6	454	63.5	367	63.8	914	63.6
1911-1912	131	63.8	414	63.8	256	64.3	801	63.9
1912-1913	91	63.7	480	63.2	276	64.1	847	63.7
1913-1914	146	63.7	498	63.6	296	64.2	940	63.8
1914-1915	168	63.9	545	63.6	343	64.1	1,056	63.9
1915-1916	178	63.7	526	63.7	303	64.2	1,007	63.9
1916-1917	170	64.0	642	63.6	227	64.1	1,039	63.9
1917-1918	258	64.2	646	64.1	241	64.4	1,125	64.2
1918-1919	276	64.2	730	64.3	228	64.5	1,234	64.2
1919-1920	157	63.6	479	64.1	242	64.4	878	64.0
1920-1921	299	64.0	504	64.0	256	64.7	1,059	64.2

* Stanford, 4,170; Smith, 10,149; Vassar, 7,064.

of 1.2 inches in average height. These results have been confirmed by the Vassar College statistics [2] based on the examinations of 7,064 women during thirty-seven years, an investigation which shows an increase in height "well over 1.5 inches"; and also by Smith College measure-

1. Mosher, C. D.: Concerning the Size of Women, Preliminary Note, California State J. Med. **19**: 53 (Feb.) 1921; The Height of College Women, Second Note, M. Woman's J., November, 1921.
2. Newcomer, Mabel: The Physical Development of Vassar College Students, 1884-1920, Quart. Pub. Am. Stat. A., December, 1921.

ments[3] of 10,149 women during a period of twenty-two years.

Table 1 gives the data concerning height for Stanford University, Vassar College and Smith College individually in year groups, with the number of cases, and the average height for each year, and also shows the same data for 21,383 women, the combined examinations from the three institutions.

TABLE 2.—*Average Height of 4,170 Stanford University Women by Ten-Year Periods (from Table 1)*

Years in 10-Year Periods	Number of Women	Average Height, Inches
1891-1892 to 1900-1901 (inclusive)	1,116	63.2
1901-1902 to 1910-1911 (inclusive)	1,200	63.6
1911-1912 to 1920-1921 (inclusive)	1,854	63.9

Table 2 gives the same data for Stanford women by decades.

Consideration of the average height of college women either separately in terms of the individual college and university group, or in terms of the measurements of the 21,383 examinations of women from Stanford, Vassar and Smith combined, shows the same increase (Table 1). We may therefore conclude that college women have increased in average height 1.2 inches or more in the last thirty years.

A careful study of the 4,170 women who entered Stanford University during the last three decades shows that while the range in height has remained about the same (14 inches), there has been an increasing number of women in the upper end of the series; or, in other words, while there are women coming to the university just as short in height as during the first decade, their number is decreasing, while at the same time the number of tall girls is increasing. Not every woman has gained in height 1.2 inches, but an increasing number of women who are tall are entering the university.

EXPLANATIONS FOR INCREASED HEIGHT OF WOMEN

Is the increase in height during these later years due to the greater admixture of the northern races through immigration? This does not appear to be the case.

The arguments against this are several. First, this increase in height is found in a western university and in two eastern colleges. There is a greater increase in the Vassar height than in the height of the Stanford women. Although the Smith records show a somewhat smaller average increase, yet these records extend over twenty-two years, only a little more than the last two decades, and at both Stanford and Vassar the increase in average height is greater from the first to the second decade than from the second decade to the third. Moreover, the study of the birthplaces of the Stanford women shows that these women are a cross section of the college women of the United States and not a localized group (Table 3). Every state in the Union, with the exception of North Carolina and Delaware, is represented, only about 37 per cent. being from California. There are 135 from the New England states and 127 from Oregon and Washington; 248 from the Middle Atlantic states, as contrasted with 297 from the Mountain states; the Southern states show a smaller attendance in college—the South Atlantic having forty-three, and the East South Central forty-six, together having eighty-nine representatives at Stanford, as contrasted with the West South Central states, with seventy-four daughters in the university; the East North Central states, which have 695 students, are not far away from the West North Central states, which have 703 students, only eight more than in the previous division. Again, may not the question be raised whether the daughters of parents born in other countries are able to go to college in any very great numbers in the first generation? The answer seems to be in the negative; certainly they do not go in sufficient proportion to influence the height in a consideration of 21,383 women who are represented in this study.

It is therefore evident that we must seek some other explanation for the increased height of women than either a greater percentage of the northern races due to immigration, or the presence of westerners who are known to be on the average somewhat taller than eastern people.

It is quite true that the average height of California women is slightly greater than the height of non-California women, as shown in Table 4. But the inclusion of a greater number of Californians in the later

TABLE 3.—*Birthplaces of 4,170 Stanford Women by Decades*

New England States (135)	First Decade	Second Decade	Third Decade
Connecticut	8	5	13
Maine	13	9	11
Massachusetts	21	14	19
N. Hampshire	4	3	1
Rhode Island	2	1	2
Vermont	6	2	1
Total No.	54	34	47

Pacific States (1,704)	First Decade	Second Decade	Third Decade
California	364	440	[illegible]23
Oregon	29	16	35
Washington	11	17	30
Total No.	404	472	828

Middle Atlantic States (248)	First Decade	Second Decade	Third Decade
New Jersey	5	10	11
New York	67	36	36
Pennsylvania	32	22	29
Total No.	104	68	76

Mountain States (297)	First Decade	Second Decade	Third Decade
Arizona	2	7	15
Colorado	8	29	61
Idaho	2	6	17
Montana	4	16	27
Nevada	19	10	9
New Mexico	4	4	3
Utah	3	11	26
Wyoming	4	2	8
Total No.	46	85	166

South Atlantic States (43)	First Decade	Second Decade	Third Decade
Dist. Columbia	4	4	5
Florida	0	2	1
Georgia	1	3	1
Maryland	1	3	3
So. Carolina	1	0	2
Virginia	5	1	1
W. Virginia	1	2	2
Total No.	13	15	15

East South Central States (46)	First Decade	Second Decade	Third Decade
Alabama	2	1	1
Kentucky	9	6	7
Missouri	4	1	1
Tennessee	2	3	7
Total No.	17	11	20

East North Central States (695)	First Decade	Second Decade	Third Decade
Illinois	80	70	106
Indiana	48	29	50
Michigan	23	22	34
Ohio	47	47	29
Wisconsin	37	24	37
Total No.	244	196	256

West North Central States (703)	First Decade	Second Decade	Third Decade
Iowa	71	82	94
Kansas	24	40	54
Minnesota	19	20	15
Missouri	24	37	42
Nebraska	10	32	48
N. & S. Dakota	1	20	30
Total No.	149	231	323

West South Central States (74)	First Decade	Second Decade	Third Decade
Arkansas	3	6	5
Louisiana	3	2	2
Oklahoma	0	0	7
Texas	3	10	33
Total No.	9	18	47

Foreign Born	First Decade	Second Decade	Third Decade
Alaska	0	1	1
Hawaii	2	6	2
Foreign	56	32	23
Unknown	18	34	50
Total No.	76	73	76

3. Smith College Statistics, New York Herald, May 9, 1921. These were submitted to Miss Elizabeth Richards of Smith College for correction and approval, after having been arranged to correspond to the Stanford and Vassar figures.

decades will not account for the increase in height, for it will be noted that the non-Californians increased in height to a much greater extent than did the Californians. That the non-Californians have shown a greater increase in height than have the Californians is an indirect proof of the contention that exercise and more hygienic clothing are among the causal factors in the development of this finer physical type of woman.

TABLE 4.—*Height of Californians and Non-Californians by Decades* *

Ten-Year Groups	Californians: No. of Women	Californians: Average Height, Inches	Non-Californians: Average Height, Inches	Non-Californians: No. of Women	Total of places Californians and Non-Californians	Birth-places Unknown; No. of Women
1891-1892 to 1900-1901 (inclusive)	364	63.4	63.0	745	1,109	7
1901-1902 to 1910-1911 (inclusive)	440	63.9	63.7	722	1,162	38
1911-1912 to 1920-1921 (inclusive)	763	63.9	63.8	1,072	1,835	19
Total.....	1,567	63.7	63.5	2,539	4,106	64

* Eight women were known to be non-Californians but the birth state was unknown. Thus there is a discrepancy in Tables 3 and 4 in the number of unknown birthplaces.

The outdoor life with its tramping, climbing, riding and exercise in the open was common to women to a much greater degree in California in the first decade than in the eastern United States. Certainly bicycling, which was one of the chief forms of athletics in the first decade, was almost universal at Stanford, where the limited means of transportation made it an essential to every-day living during those pioneer days. With bicycling came the necessity for shorter, lighter and looser clothing. It became imperative to discard the voluminous skirts measuring from 9 to 15 feet in diameter, which often weighed as much as 7 pounds,[4] and thus here and there some venturesome college girl tried something in the way of dress which was the forerunner of the sport suit of today.

In my first paper, "Concerning the Size of Women," [1] it was stated after a general survey of all the available data that two great factors are concerned in these results: (1) the change in fashion, making possible the wearing of clothing which interferes less with the hygiene of the woman (2) the increased physical activity, which has been brought about by the (*a*) change in dress; (*b*) development of physical training and sports in the secondary schools as well as in our colleges, and (*c*) change in the conventional attitude toward these activities for women.

INCREASED PHYSICAL ACTIVITY OF WOMEN

Let us consider, first, the increased physical activity of women. It is a matter of common knowledge that the modern college girl is more physically active than the women of thirty years ago, but the Vassar studies make a real contribution to this subject. From 1896 to 1900, 26.5 per cent. of the entering students at Vassar College had engaged in no form of sport before coming to college; from 1916 to 1920, only 0.6 per cent. reported no sports before admission to the college. This almost universal physical activity during the preparatory years has been fostered, not only by the laws for compulsory physical training in the secondary schools, but also by the municipal play grounds and swimming pools. This eagerly to be desired, more fully developed woman will, therefore, be found in constantly increasing numbers among all classes of women, those who go to college and those who do not go, thus insuring better wives and mothers, and consequently a better race.

4. Mosher, C. D.: Health and the Woman Movement, Ed. 2, New York, Woman's Press, 1918, p. 22.

INFLUENCE OF FASHION

The other factor is the influence of fashion. It has already been noted that, with increasing physical activity, a change to lighter and looser clothing was made and fashion was forced to adapt itself to the introduction of the bicycle and automobile. The changes in fashion have been studied by A. L. Kroeber,[5] the anthropologist, who has traced these variations over a period of more than sixty years. His figures for twenty-nine years of the period covered by the Stanford measurements have been plotted in curves. The ratios given for the width of skirt, the length of skirt, and the width of waist throw some light on the problem of the relation of change in fashion to increased height and functional disability, as shown by the Stanford studies on these two subjects.

The detailed curves after Kroeber are given, and also the average curve, which shows even more clearly the gradual narrowing and shortening of the skirt and at the same time the increased breadth of waist.

In any consideration of the advantages to the health of women in the narrowing and shortening of the skirt, we must bear in mind that I am not referring to such vagaries of fashion as are represented in the detailed curve for the year 1911, and again in 1920, developments which would be just as hampering to freedom of motion as were the heavy, voluminous skirts, although the excessive narrowness was compensated for in part, at least, by an equally and unduly excessive shortening. These very extreme styles were of relatively short duration and therefore of minor significance. The

TABLE 5.—*Arithmetical Means of Girth of Waist of Vassar College Students, 1884-1920* *

Year	No. of Women	Mean, Cm.	Standard Deviation, Cm.	Year	No. of Women	Mean, Cm.	Standard Deviation, Cm.
1884.....	30	65.2	4.6	1903.....	200	60.5	4.9
1885.....	39	63.2	3.6	1904.....	248	59.0	4.8
1886.....	31	62.7	6.4	1905.....	208	60.0	4.6
1887.....	44	62.7	4.3	1906.....	160	61.5	5.4
1888.....	52	62.9	5.8	1907.....	205	61.2	5.5
1889.....	59	62.7	3.9	1908.....	283	61.0	5.1
1890.....	51	62.1	4.9	1909.....	267	61.8	5.5
1891.....	112	63.0	4.5	1910.....	263	63.3	5.0
1892.....	127	62.6	3.6	1911.....	254	63.8	4.9
1893.....	127	62.7	4.0	1912.....	274	63.9	5.2
1894.....	107	62.5	5.1	1913.....	297	63.9	4.5
1895.....	146	62.7	4.4	1914.....	340	63.4	4.4
1896.....	160	59.6	4.2	1915.....	307	62.6	5.0
1897.....	199	60.2	4.1	1916.....	227	65.6	4.7
1898.....	183	60.9	4.8	1917.....	220	64.9	4.3
1899.....	216	61.2	4.8	1918.....	....	....	...
1900.....	225	61.0	4.4	1919.....	240	65.1	4.4
1901.....	283	60.6	4.5	1920.....	296	65.3	4.1
1902.....	230	60.8	4.5				
Total.....					6,812	62.7	5.1

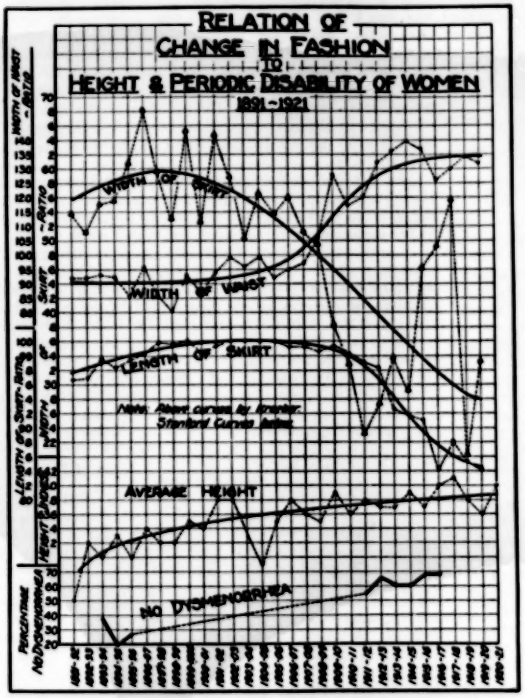
* Newcomer, Mabel: The Physical Development of Vassar College Students, 1884-1920, p. 959.

trend of the curve, when studied in connection with the Stanford curves for periodic disability and height, shows an unmistakable parallel.

Reliable data on the menstrual conditions of the women at Stanford were available only for the years 1893, 1894, 1895, 1912, 1913, 1914, 1915, 1916 and 1917. In an earlier paper I discussed the unreliability of general statements about the menstrual function as col-

5. Kroeber, A. L.: On the Principle of Order in Civilization as Exemplified by Changes in Fashion, Am. Anthropologist **21**: 235-263, 1919.

lected from the women concerning themselves.[6] The records for the years mentioned I can personally vouch for as being as reliable as single statements can be made. No case in which there was pain has been overlooked. The close relation between these changes in fashion and the relief from menstrual pain is obvious. This relation has been repeatedly shown in my clinical experience, but lack of space prevents the citing of cases. The evil effect of heavy clothing is also reflected in the percentage of pain at the menstrual period, as shown in the Stanford no dysmenorrhea curve, which



Relation of change in fashion to height and periodic disability of women, 1891-1921.

from 1911 to 1917 steadily rises, until in 1915 and 1916 it shows that 68 per cent. of the women were free from pain at the time of menstruation—a great contrast to 1894, when there were but 19 per cent who did not suffer pain at their menstrual periods.

The Vassar investigation in regard to the girth of waist is shown in Table 5. It will be noted that there was a steady decrease in the girth of waist up to 1904, and a steady increase from 1904 to the present time. This is readily explained by the study of Dr. Kroeber's curve for breadth of waist given in the accompanying chart. As breadth of waist is a fair indicator of the degree of compression, it is not surprising that the demand of fashion for a small waist should be evident in the ratio of less than 0.5 up to 1904, while as this demand gradually lessened, the ratio changed to 3.5 from 1905 to 1919. The ratios should be correlated with a decreasing girth of waist as a result of continuous compression over a period of years. When the demand of fashion for a small waist finally ceased, the increase in width of waist occurred, as shown in the curve from 1904 to 1921. To this is related the increase previously considered in the number of women who do not suffer pain at menstruation.

6. Mosher, C. D.: Functional Periodicity in Women and Some of the Modifying Factors, Second Note, California State J. Med., January and February, 1911; M. Woman's J., April, 1911; Am. Phys. Ed. Rev., November, 1911.

RELATION OF CHANGE IN FASHION TO INCREASED HEIGHT

How is this change in fashion, which permits more normal functioning and greater freedom of exercise, related to increased height?

One of the serious problems in regard to college girls during the early days was how to induce these delicate, undeveloped women to eat enough nourishing food. The girl of this first decade lacked appetite. The vigorous modern girl, physically fit, eats in season and out, and is as hard to satisfy as a growing boy—and for the same reason: the body is working normally and needs more food for growth and development. Here we find a reasonable explanation of the fact that the woman not only functions more perfectly, but weighs more and is growing taller, while, as was demonstrated in 1917, the difference in muscular strength[7] between men and women is due to the difference in use of muscles and not to sex.

This more fully developed and more perfectly functioning woman is well fitted for motherhood, while her desire for children is shown by the fact that she no sooner comes out from under the anesthetic at one labor than she begins to plan for the coming of her next baby.

In this age, when questions of population and the falling birth rate are of such vital import, it behooves us to give attention to every factor that has any bearing on this subject.

It is time that we ceased thinking in terms of the unfitness and weakness of women. This splendid modern woman, grown taller and more vigorous because, freed from restricting fashions of dress, she exercises more and consequently eats more, has become better fitted to be the mother of finer sons and daughters, the promise of a stronger race.

7. Mosher, C. D., and Martin, E. G.: Muscular Strength of College Women, J. A. M. A. 70: 140 (Jan. 19) 1918. The Strength of Women, Proceedings of the International Conference of Women Physicians 1: 160, 1919.

Fatigue and Tuberculosis.—For the tuberculous, fatigue is the flash from the focus, and he who acknowledges the message by immediately throwing on the brakes is the patient whom we can appoint engineer of his own case. The patient who never pushes himself to the point of fatigue, or who at once stops short when it is upon him, will never delay his "cure" by any measures within his control, but will hasten it. —Allen K. Krause.

THE CLASSIFICATION OF HEART PAIN *

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Heart pain may be a very important symptom or it may be negligible. Its general interpretation is so obscure and vague that we have made an attempt to work out a provisional classification of practical value in the clinic, where in the past there has tended to be confusion, such as the partial and unsatisfactory separation of pseudo-angina pectoris from true angina pectoris. We have found that apparently more important in the analysis of the pain than its position and character is the underlying cause. Therefore our classification is mainly etiologic.

HISTORICAL

Very little was written by early medical authorities on the subject of heart pain. Hippocrates mentioned breast pain but without connecting it with the heart. Coelius Aurelianus took scant notice of pain in the breast, and Erasistratus wrote of a "kind of paralysis by which walkers are suddenly seized," forcing them to halt for a moment; but whether this symptom was heart pain or intermittent claudication or some other condition is not clear. Galen did not mention breast pain.

In more recent times, Morgagni and Rougnon described cases of probable angina pectoris, but it was not until Heberden (1710-1801) wrote his "Commentaries on the History and Cure of Diseases" that a good description of the so-called angina pectoris was recorded. These commentaries, consisting of original bedside notes and discussion collected to 1782, contain a chapter on pectoris dolor. Thus it is evident that Heberden recognized not only the severe anginal type of pain but also other types of breast pain. In the course of this chapter he wrote:

> But there is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind of danger belonging to it, and not extremely rare, which deserves to be mentioned more at length. The seat of it, and sense of strangling and anxiety with which it is attended, may make it not improperly be called angina pectoris.

Further remarks about this severe type of heart pain by Heberden are so instructive and interesting and so little heeded that they deserve quotation.

> The pulse is, at least sometimes, not disturbed by this pain, as I have had opportunities of observing by feeling the pulse during the paroxysm. Males are most liable to this disease, especially such as have past their fiftieth year. . . . I have seen nearly a hundred people under this disorder, of which number there have been three women . . . (The pain may be brought on not only by exertion, excitement or meals, but also) by swallowing, coughing, going to stool, or speaking.
>
> The angina pectoris, as far as I have been able to investigate, belongs to the class of spasmodic, not of inflammatory, complaints. For
>
> In the first place, the access and the recess of the fit is sudden.
>
> Secondly, there are long intervals of perfect health.
>
> Thirdly, wine, and spirituous liquors, and opium, afford considerable relief.
>
> Fourthly, it is increased by disturbance of the mind.
>
> Fifthly, it continues many years without any other injury to the health.
>
> Sixthly, in the beginning it is not brought on by riding on horseback or in a carriage, as is usual in disease arising from scirrhus, or inflammation.
>
> Seventhly, during the fit the pulse is not quickened.
>
> Lastly, its attacks are often after the first sleep, which is a circumstance common to many spasmodic disorders.
>
> On opening the body of one, who died suddenly of this disease, a very skillful anatomist could discover no fault in the heart, in the valves, in the arteries, or neighbouring veins, excepting some small rudiments of ossification in the aorta. The brain was likewise everywhere sound.
>
> With respect to the treatment of this complaint, I have little or nothing to advance: nor indeed is it to be expected we should have made much progress in the cure of a disease, which has hitherto hardly had a place, or a name in medical books. Quiet, and warmth, and spirituous liquors, help to restore patients who are nearly exhausted and to dispel the effects of a fit when it does not soon go off. Opium taken at bed-time will prevent the attacks at night.

It is interesting to observe that little advance has been made in the treatment of this condition in the last hundred and fifty years. The introduction of nitrites, the tendency to enforce absolute rest, and now the possible relief by surgical intervention (such as Jonnesco's operation) are the only steps forward in combating this condition, which has seemed to grow more and more common.

One final observation by Heberden is worth noting. He cited the case of a man, aged 60, who had an uneasy sensation in his left arm without breast pain. Heberden's diagnosis of angina pectoris sine dolore seemed to be confirmed by the sudden death of the patient.

In 1799, Parry of Bath confused Heberden's clear description of severe paroxysmal heart pain by writing his book, entitled "An Inquiry Into the Symptoms and Causes of the Syncope Anginosa, Commonly Called Angina Pectoris." The fainting attacks of cardiac origin, so well described later by Adams and Stokes, should not, of course, be confused with heart pain. As long ago as these early authorities, Heberden, Parry and Jenner, there was much controversy as to the cause of the severe paroxysmal heart pain. This controversy still exists at the present day, represented largely on the one hand by the followers of Sir Clifford Allbutt, who consider aortic disease and distention of the aortic walls the cause of the pain of angina pectoris, and, on the other hand, by the majority of authorities in cardiovascular disease, represented by Sir James Mackenzie, who consider it due to the acute myocardial fatigue of ischemia. Among the other less popular theories is that of the production of the severe pain by acute dilatation of the heart from overstrain. Jenner, at the end of the eighteenth century, and Allan Burns, in 1809, considered coronary artery disease responsible for angina pectoris.

In 1846 Latham wrote very cautiously concerning the etiology of angina pectoris thus:

> Our knowledge then of angina pectoris stops short with its symptoms. The idea of it cannot be made to rest in any definite form of disease beyond them. We are sure of what it is as an assemblage of symptoms. We are not sure of what it is as a disease.

Always much more attention has been paid by medical authors to the question of what theory is the most reasonable in explanation of angina pectoris than in

* Read before the Association of American Physicians, Atlantic City, N. J., May 1, 1923, and Bristol County Medical Society, Fall River, Mass., May 3, 1923.

any attempt to distinguish between the various types of heart pain. Sir James Mackenzie has gone further in this regard than any one else, but it seems to us that he has not sufficiently differentiated the etiologic types of pain. He includes under the term angina pectoris much that should be classed as dolor pectoris instead. "Angina" literally means "strangling," while "dolor" is "pain." Mackenzie has written:

> If a large number of cases be studied, symptoms of angina pectoris will be found to arise in patients with the most diverse forms of lesion, and even in patients without any evidence of cardiac disease. In the appendix I quote a number of cases from which it will be seen that angina pectoris can arise in cases of overstrain, aortic aneurysm, aortic valvular disease, atheroma of the coronary arteries, myocardial degeneration or enfeeblement of the heart muscle from poor nourishment, increased arterial pressure, sudden changes in the rate and rhythm of the heart, temporary conditions of an obscure origin, and "senile" changes. . . . In predisposed individuals, all circumstances which throw more work on the left ventricle induce an attack of angina pectoris.

CLASSIFICATION

We have found that a satisfactory classification etiologically of heart pain is into the following groups: (1) Simple fatigue pain of either ventricle or of both; (2) "irritable heart" pain; (3) paroxysmal heart pain; (4) pain of coronary thrombosis; (5) aortic pain, and (6) pain of pericarditis. As will be seen, this separation according to etiology is more helpful than separation according to position or severity.

1. *Simple Fatigue Pain.*—Muscle fatigue is without much doubt responsible for the great majority of heart pains. Any muscle, when exhausted, tends to become painful. This fatigue pain may be the result of a number of different factors. It may occur in the case of the hypertrophied hearts of chronic hypertension or of aortic regurgitation or aortic stenosis or of adherent pericarditis as a sign largely of left ventricular fatigue. It may occur in the case of the hypertrophied hearts of chronic and well marked mitral stenosis or congenital pulmonic stenosis as a sign of right ventricular fatigue. Dr. James P. O'Hare, in a recent analysis of a hundred cases of essential or vascular hypertension, found that in these patients "cardiac pain is most commonly present as a dull ache in the region of the apex and lower precordia. Pain at the base of the heart, apart from the classical angina pectoris, is less common. Typical angina occurred in only three of our cases." This has also been our experience.

Uncomplicated mitral stenosis may or may not give rise to precordial pains and aches. Such discomfort comes mostly on exertion and is apt to be brief and sharp, but sometimes is a dull ache. It has been present in about half of our cases of well marked uncomplicated mitral stenosis. It has not been right-sided. With complications such as auricular fibrillation, congestive failure, marked nervousness, or further valve lesions, precordial pain is found more frequently, but by no means constantly. Aortic regurgitation, aortic stenosis and pulmonary stenosis similarly may or may not be attended by heart pain, precordial in position.

Fatigue pain may sometimes occur in arteriosclerotic heart disease where the coronary arteries are so narrowed permanently that the myocardium is insufficiently nourished with blood, a sign of fatigue of either, or often of both, ventricles. This does not include the paroxysmal pain, the so-called true angina pectoris, although in the past the two types have been confused, as by Burns in 1809.

Fatigue pain may also result from the added effort due to paroxysmal tachycardia or paroxysmal auricular fibrillation or flutter (causes of many cases of so-called acute dilatation), or permanent fibrillation or flutter when the ventricular rate is not under digitalis control. It may occur with congestive failure, no matter what the cause. In fact, taken by itself in the presence of some one of the structural lesions or functional disturbances mentioned above (and in the absence of excessive nervous irritability), this type of heart pain probably should be regarded as an early symptom of the so-called congestive type of failure, which may not advance beyond this point. Confirmation of this fact lies in the observation that either rest or digitalis decreases or abolishes this type of heart pain.

A therapeutic test with digitalis is always of value when the diagnosis is doubtful, without changing in other ways the method of life of the patient during the test. Nitroglycerin is without effect. In this way, by the comparison of the effects of the two drugs, digitalis and nitroglycerin, a differentiation can be made between simple fatigue pain and the paroxysmal pain of angina pectoris. When neither drug helps we may need to rely on antisyphilitic therapy (especially potassium iodid) in aortic pain, or morphin for the pain of coronary thrombosis or on bromids or other sedatives for nervous heart pain.

It must always be remembered that the more sensitive the nervous system of the individual, the lower the threshold and the less the abnormality needed to produce pain. This undoubtedly is one reason for the different reactions in symptomatology in different individuals afflicted apparently by the same pathologic condition. There would seem to be other cause or causes for the variable occurrence of heart pain of which we know little or nothing at present.

2. *Nervous Heart Pain.*—Just how far the heart pain of effort syndrome may be included under the heading of the fatigue type is uncertain. It seems more likely that it should be classed separately. In the absence of extreme overexertion it is found in nervous, high-strung individuals, old or young, but more likely the latter. It is the result of excitement as often as of effort. It would seem to be the result of overaction of the heart in a person with a low sensory threshold. Then, too, there is an exaggeration of the importance of even a slight pain if it happens to be in the region of the heart, particularly if the physician consulted by the patient is also doubtful about it or considers it definite evidence of heart trouble.

Mackenzie writes:

> The majority of these cases are highly strung nervous people, and especially women. They have frequently been exposed to some strain, mental or physical, and their cardiac symptoms may be but a part of the manifestation of ill health. We find such symptoms frequently at the menopause, or when the patient is subject to some other complaint, as intestinal stasis or poisoning from some microbic infection. I have watched such individuals for over twenty years.

During the war, of course, there were many thousands of such patients in every army, most of them inheriting a sensitive nervous system and further depressed by fatigue, hardship or infectious disease. Even the most robust soldier, however, if enough exhausted, may show symptoms.

There seems at times to be some definite connection between the glands of internal secretion and irritable heart pain. We have seen three women who for years had suffered from heart pain following double oophorectomy. In all three considerable relief followed the administration of ovarian extract.

Both the ordinary fatigue pain and that of the nervous heart vary much in intensity. Generally the pain consists of a precordial ache, but at times it may be so severe that there is a sharp and knifelike stab in the precordia, with radiation to the back, left shoulder or axilla, and down the left arm to the finger tips and even to the right side of the body. In the case of fatigue pain, exertion is practically always the exciting factor. In the case of the pain of the so-called nervous heart (or effort syndrome), excitement may produce more pain than effort. While rest and digitalis act to relieve or to diminish the likelihood of the fatigue pain, reassurance and nerve sedatives act best in the case of the "nervous heart" pain. Nitroglycerin is of no avail.

3. *Paroxysmal Heart Pain.*—Although we do not yet know the mechanism of the production of the paroxysmal heart pain called angina pectoris, it is a definite symptom of heart disease and should be classed separately.[1] Most of the cases of so-called pseudo-angina pectoris belong in this group, the others fitting into one of the other groups: fatigue, nervous or aortic pain. The misleading term pseudo-angina should be dropped altogether.

Paroxysmal heart pain may be brought on in susceptible hearts of older people by any stimulus, whether exertion, excitement, cold air, food in the stomach, or gas in the bowels, and, when more severe, may occur when the person is quiet in bed without an obvious exciting factor. It is essentially of paroxysmal nature without pulse disturbance, substernal or precordial in site of origin and dramatically relieved by the nitrites and not by digitalis. It is important, as Heberden pointed out, to remember that pain and not disturbed rhythm is characteristic of this condition; we have seen a number of cases of older people with paroxysmal auricular fibrillation wrongly diagnosed and unwisely warned and treated as angina pectoris. It is also interesting to recall Heberden's early observation that alcohol acts favorably to prevent or even to stop the pain. We have found that brandy and whisky in small doses actually prevent the attacks of pain or greatly reduce their frequency and intensity.

The fatigue pain of hypertension, of mitral stenosis and of paroxysmal tachycardia, the nervous heart pain of young people and the substernal pain of syphilitic aortitis, must be differentiated from this paroxysmal pain of probable coronary disease.

The paroxysmal pain is a relatively rare finding in large public hospitals, since it is more a condition induced by the nervous strain of business and professional life. In private cases it is seen frequently, thirty-six patients with the condition having consulted us during the last year. Prof. K. F. Wenckebach of Vienna states that patients with this paroxysmal pain of true angina pectoris are very numerous now in Vienna as compared with years ago, probably as the result of the strain of the great war and its consequences.

It is apparently particularly true in the case of the paroxysmal heart pain that the more nervous the victim the less need be the abnormality. Stolid people may live to the age of 70 years and give the first evidence of heart trouble when they drop in a Stokes-Adams attack; sensitive people may have barely reached the age of 40 years when they begin to have typical paroxysmal heart pain. The recognition of this fact is probably of much importance both in prognosis and in treatment. It must be remembered, too, that the paroxysmal pain of angina pectoris may be slight in degree, especially in its early stages. A fairly long life is still possible after the first appearance of the pain. This is well exemplified in the case of John Hunter himself, who survived by more than twenty years the onset of his angina pectoris. He further illustrates the favorable prognosis for life that is likely in a person of highly nervous temperament. Sometimes pseudo-angina pectoris has at first been diagnosed in such cases, sudden heart death later on showing the diagnostic error.

Mackenzie has written interestingly of the variation of individual response.

> It is a well-recognized fact that seemingly identical lesions of the heart give rise to different phenomena in different people. This difference is seen especially in the reaction of different individuals to pain-producing stimuli. It is probably because of this individual peculiarity that we find angina pectoris the expression of a grave lesion in others, while in many pain is absent in even the most advanced cases of disease and heart failure. Experience has taught me to look on angina pectoris from a twofold aspect, an expression of cardiac exhaustion and also an expression of a susceptible nervous system.

Estimation of the nervous irritability of the patient is thus of great importance in judgment of the symptom of heart pain. Simple observation of the patient is of chief importance in making this estimate. The history, past and present, and particularly the family history from the standpoint of the nervous system, the activity of the reflexes, and the reaction to stimuli, such as excitement and coffee, are helpful. Dr. Libman of New York has used for years the test of pressure on the styloid process to judge the individual's sensitiveness.

Radiation of heart pain depends largely on the intensity of the pain. The more severe the pain, the greater its radiation. Since the paroxysmal pain of angina pectoris is likely to be the severest heart pain of all, its radiation tends to be greatest. But even in other types of heart pain, relatively unimportant so far as life is concerned, the pain may be severe enough to radiate to the finger tips.

An attempt has been made to distinguish between right ventricular and left ventricular pain. Rarely this has seemed possible; we have seen two cases of right sided pain showing at postmortem examination much more involvement (practically occlusion) of the right coronary artery than of the left. All sorts of variations in the position of heart pain and its radiations occur, such as burning sensations in the right or left wrists actually preceding the pain in the thorax, somewhat similar to the famous case cited by Heberden of "angina pectoris sine dolore." Further study of these variations is necessary.

1. It is likely that coronary irritability causes paroxysmal heart pain by giving rise to coronary spasm, and thus to acute anemia and acute exhaustion of the myocardium. There does not need to be extensive arteriosclerosis or, indeed, possibly any macroscopic pathologic condition at all. In fact, the more abnormal and hard an artery, the less possibility of vasoconstriction. It is therefore conceivable that the condition may be an early sign of coronary disease and not a late one. Since the process of arterial change is usually not uniform, there may be for many years some vessels just diseased or irritable enough to produce the paroxysmal pain. But no matter what the cause, the type is clear.

4. *Pain of Coronary Thrombosis.*—Rapid blocking of a large coronary vessel, almost always thrombosis of a sclerosed artery, is accompanied usually by long continued heart pain of very severe nature, not relieved by rest, digitalis or the nitrites, and requiring repeated doses of morphin. The seat of the pain is generally precordial or substernal, but now and then it is abdominal, particularly epigastric, or right or left hypochondrial, and in such instances it is likely to be confused with acute abdominal conditions, such as gallstone colic or perforation of a peptic ulcer. Recovery may occur in spite of the extreme severity of the pain and the gravity of the condition.

5. *Aortic Pain.*—In aortic disease of syphilitic origin—that is, syphilitic aortitis and aneurysm—there is a fairly characteristic dull high substernal ache, sometimes increased to a sharper pain and even radiating, but not paroxysmal. This does not respond to digitalis, rest or nitroglycerin, but tends to melt away under antisyphilitic treatment. It is likely that potassium iodid has gained some of its great reputation through its action in this type of case. It must be remembered that in syphilitic aortitis, in addition to the aortic pain, involvement of the coronary arteries may give rise apparently to the typical paroxysmal pain of coronary disease.

6. *Pains of Pericarditis* (and of hepatic engorgement).—Finally, there are also the transient pains of acute fibrinous pericarditis (and the epigastric and right hypochondrial distress of engorgement of the liver due to congestive cardiac failure) which are generally easily recognized.

Mention should be made of the probable coexistence in various cases of pains of different type; for example, the fatigue pain of mitral stenosis and the pain of the nervous heart in a neurotic woman with advanced mitral stenosis, or the aortic pain of syphilitic aortitis and the fatigue pain of aortic regurgitation, perhaps also the paroxysmal pain of angina pectoris in a middle-aged man with cardiovascular syphilis. (In syphilitic aortitis there is frequent involvement of the mouths of the coronary arteries.) In such cases the analysis of the pain is difficult but interesting.

SUMMARY

Heart pain may be thus classified:

1. Simple fatigue pain:
   - (*a*) Chronic hypertension.
   - (*b*) Aortic stenosis or regurgitation.
   - (*c*) Mitral stenosis.
   - (*d*) Pulmonic stenosis—congenital heart disease.
   - (*e*) Adherent pericarditis.
   - (*f*) Paroxysmal tachycardia or paroxysmal auricular fibrillation or flutter.
   - (*g*) Permanent auricular fibrillation or flutter with high ventricular rate.
   - (*h*) Permanent coronary narrowing due to arteriosclerosis.
2. Nervous heart pain, including effort syndrome.
3. Paroxysmal heart pain (probably of coronary disease or irritability), the so-called true angina pectoris.
4. Pain of coronary thrombosis.
5. Aortic pain, of syphilitic aortitis and aneurysm.
6. Pain of pericarditis.

Frequently, combinations of these factors occur.

CONTRIBUTION TO THE PATHOLOGIC PHYSIOLOGY OF BOTULISM *

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During the last few years, an increasing interest has been taken in the form of food poisoning known as botulism. The condition is by no means a new one, as it has been recognized and described for almost 200 years. In this country, however, numerous outbreaks have occurred recently, and these, on account of certain characteristics, have served to call the attention of both the profession and the laity to the seriousness of the intoxication. That the condition appears in widely separated districts, that it frequently attacks several members of a family, and that its appearance is sudden and its mortality high are all facts which combine to give the outbreaks somewhat of a spectacular nature. With all this interest, however, it has not been possible to arrive as yet at an agreement as to the pathologic foundation for the clinical manifestations of the intoxication.

In one of the most extensive monographs [1] that have appeared on the subject in recent years, it is pointed out that there are two views as to the pathology of the disease, but that as yet the cause of the symptoms, or the way in which the paralysis of the muscles is produced, is unknown. Dickson [1] holds that one of the lesions characteristic of botulism is the thrombosis in the blood vessels of the brain, which was described by Wilbur and Ophuls as occurring in the Stanford fatal case. It was found also in three of the fatal cases described by Dickson, but, as he says, the importance of the thrombi in relation to the clinical symptoms is unknown.

The other view is that the pathologic lesion consists of degenerative changes in the nerve cells in the motor nuclei, a view advanced by Marinesco and supported by later workers. There are serious difficulties connected with accepting either of these views as representing the whole story of the pathology. For one thing, it is hard to explain on the thrombosis theory that there are no sensory symptoms described as an essential part of the disease. This is strange, since the thrombi are supposed to be widespread in the brain vessels. Then, also, the relatively rapid and complete recovery sometimes seen in serious cases is hard to understand if the symptoms are due to thrombi shutting off the circulation to the nuclei in the brain. Finally, thrombi have been found in only a certain number of cases that have been examined pathologically.

The theory that the underlying trouble is due to degenerative changes in the nerve cells is quite attractive, but the difficulty here is that the distribution of these lesions does not correspond to the motor paralysis. For instance, the third cranial nerve is perhaps the one which clinically shows the most constant involvement, and yet here Marinesco found the least severe nerve cell change. These and other facts, which are discussed

* From the Pharmacological Laboratory of the University of Michigan.
* Presented before the Association of American Physicians, Atlantic City, N. J., May 2, 1923.
1. Dickson: Monograph 8, Rockefeller Inst. M. Res., July, 1918.

fully by Dickson, have led him to conclude that there must be some other factor involved than those mentioned. He discusses the possibility that the toxin may act on the terminations of certain nerves, and suggests a similarity between poisoning by belladonna and by botulinus toxin. He cites the dilatation of the pupil, the drying up of the secretions and the inhibition of the intestinal movements as points of similarity, but it must be pointed out that the comparison between the two intoxications is seen only on very superficial examination. For instance, the mydriasis and the drying of the secretions are by no means seen in every case of botulism—the reverse condition of the secretions is by no means uncommon. Then, and perhaps most important, atropin has no action on the terminations of the motor nerves in warm blooded animals, whereas the paralysis of the voluntary muscles is characteristic of botulism.

As regards such a peripheral motor paralysis, a recent paper by Dickson [2] says that in dogs, cats and rabbits no such paralysis exists—that the motor nerves are normal. He does find some block in the vagus, but this is of an unstable nature, being only temporary.

Finally, as an explanation of some of the vascular changes, the possibility of an action of the toxin on the endothelium of the vessels is suggested. That there may be such an action is supported by the investigations of Warthin,[3] reported recently.

A survey of the literature since the paper by Dickson shows many important contributions to the subject, reports of cases, some with necropsy findings, others with reports as to the various aspects of the bacteriology of the condition; but none, so far as our present purpose is concerned, add anything material to that given in the general discussion above. Many cases have been described in the literature as botulism which are clearly something else. As an example, a recent case [4] may be mentioned: A child ill six weeks showed, among other symptoms, severe pain, delirium, rigidity of neck, muscular twitchings, knottings, rigidity, head bowed back, paroxysms of pain, and so on. Such a case was described as botulism, but the postmortem examination disclosed leptomeningitis, internal hydrocephalus, and other complications. Such a report does not add much to our knowledge of botulism.

SYMPTOMS

It should be emphasized that the essential symptoms of botulism are motor—a paralysis of certain nerves or muscles, but a loss of motor power in any case. There is early involvement of the third nerve, and, finally, paralysis of all the extrinsic muscles of the eye, and difficulty in swallowing and talking, due at least in part to paralysis of the pharyngeal muscles and impairment of the movements of the tongue. Progressive muscular weakness may become so marked as to lead to inability to raise the arms and legs, or even the head. There is marked immobilization of the face muscles, leading to a masklike expression. The increasing weakness of the respiration is well described by Fischer,[5] who speaks of the paralysis of the diaphragm with the disappearance of the abdominal type of breathing. He also speaks of the gradual loss of movement in the lower thorax, with the movement of the upper ribs becoming slighter and slighter until respiration stops from paralysis of the "respiratory center."

One of the best of the recent descriptions is that by McCaskey,[6] who reports seven cases with four deaths. The interesting point in this report is that McCaskey states that while histologic changes have been described in the central nervous system, the clinical picture appears to be that of a peripheral paralysis. He compares the clinical picture to that produced by diphtheria, a disease which produces its paralytic manifestations by an action on the peripheral nerves. While struck by this similarity suggesting a like pathologic basis, McCaskey is compelled to accept the general view of a central lesion.

RESULTS OF EXPERIMENTS

From this short discussion of the recent literature of the subject, it will be clearly seen that there is no explanation of the symptoms of botulism that is generally satisfactory. We therefore decided to investigate the subject, using the ordinary pharmacologic methods, to see whether these would add anything to our knowledge. The toxin employed was furnished us by Prof. Herbert W. Emerson of the department of bacteriology of this university, and was prepared by him from material obtained from different sources. While all the toxins supplied by Professor Emerson acted essentially alike, some were stronger than others, but by far the most toxic was that prepared from bacilli isolated from the intestinal contents of a patient dying in Grand Rapids as a result of eating spinach. The second sample of toxin was prepared from bacilli isolated by Dr. Krumwiede from olives concerned in the New York cases of poisoning. The third sample was from bacilli isolated by Dr. Emerson from the New York olives. The foregoing were all of Type A. The fourth sample was toxin of Type B, prepared from bacilli isolated from cheese by Miss Nevins while with the New York State Laboratories at Albany.

With these toxins, but mainly with the first mentioned, we have carried out experiments, utilizing frogs, guinea-pigs, rabbits, cats, dogs and chickens. Up to the present, our experiments with frogs have been negative, but we intend to carry these investigations further. All the animals mentioned (except the frogs) were injected intraperitoneally—the guinea-pigs with doses averaging about 0.01 c.c., a dose which would kill in about twenty-four hours. The cats were much more resistant. Two or three injections of 5 c.c. each were required to kill in a week's time, and as the cats usually would not eat after the symptoms had developed, it was hard to tell how much of the weakness was due to the toxin and how much to lack of food. To obviate the difficulty, larger doses of 10 c.c. each were given, and two such doses would, on the average, kill a cat within seventy-two hours. Dogs were also resistant. After a little experience, we found that an injection of 10 or 15 c.c., followed by a second dose of the same size, would usually produce symptoms in thirty-six hours, and a total of 30 c.c. would usually kill in forty-eight hours. Cocks were more susceptible; 0.5 c.c. of a good toxin injected into the breast muscles usually killed in from twenty-four to forty-eight hours.

Considering now the results obtained on the mammals, it would not seem necessary to describe the symptoms for each species in detail, as they have been given by earlier workers. One of the earliest and most characteristic symptoms seen in guinea-pigs, rabbits and

2. Dickson: Proc. Soc. Exper. Biol. & Med. **18**: 313, 1921.
3. Warthin: Tr. A. Am. Phys. **37**: 357, 1922.
4. Semerak, C. B.: J. Infect. Dis. **29**: 190 (Aug.) 1921.
5. Fischer: Ztschr. f. klin. Med. **80**: 58, 1916.
6. McCaskey, G. W.: Am. J. M. Sc. **158**: 57 (July) 1919.

cats is the great relaxation of the abdominal walls. They seem to offer no resistance to the palpating hand. Well nourished cats undergo quite a change in their appearance, as their flanks apparently fall in, giving the impression that they are starved. Perhaps the next symptom to attract attention is the change in character of the respiration. Normal cats, sitting quietly, show the abdominal type of breathing. With each downward excursion of the diaphragm, pressing as it does on the contents of the abdomen, the sides of the abdomen are pressed outward. In botulism cats, however, the type of respiration changes early. Doubtless owing to paralysis of the diaphragm, it becomes passive, and the accessory muscles being called into play, the thorax is raised, creating an increased negative pressure in the abdomen, and thus pulling in the nonresisting abdominal walls. The type of movement is thus completely reversed, giving quite a striking respiratory picture. As the intoxication progresses, the thoracic muscles become weaker and weaker, so that the phenomenon described becomes less marked, until the respiration stops. The muscular weakness which first appears in the hind legs is a later manifestation than the respiratory disturbance. This too, becomes progressively greater, and involves the forelegs, but it rarely passes into a total paralysis, as just before death the animal may be able to make movements. It may try to turn over or even to make efforts at standing. The movements of the head do not seem to be interfered with seriously until very late in poisoning, except, of course, in chickens, which show the characteristic limber neck due to paralysis of the neck muscles. As to the secretions, there was nothing very characteristic. Certain of the cats were salivated, and the saliva would slowly trickle from their mouths. This symptom was not common in dogs, in which the secretions were apparently lessened, as it was quite common for these animals to have a dry, rasping cough as though they were making efforts to expel dry mucus, but it was always without avail. This dry cough was not a common symptom with cats, but was occasionally found. The symptoms from the gastro-intestinal tract also differed in different animals. Constipation seemed to be the rule with dogs, but diarrhea was very common in cats and especially in chickens. In man, as is well known, obstinate constipation is the rule in botulism.

ETIOLOGY

Passing from this general discussion of the symptoms, we shall take up a closer analysis of their causation. As constipation is such a prominent symptom as just mentioned, we decided first to investigate the condition of the gastro-intestinal tract. Guinea-pigs, rabbits, cats and chickens were utilized for the purpose. The animals were injected as stated, and then as the intoxication progressed, they were carefully watched until they died, so as to get them at the moment that respiration ceased. At that time, the chest and abdomen were opened and sections were cut from the esophagus, stomach, and upper and lower intestine. These were placed in cold Ringer's solution and, in case they were not to be used at once, the container with the tissue was placed in a refrigerator. When needed, the pieces were washed and then placed in warm oxygenated Ringer's solution and arranged in the usual manner to record the movements on a kymograph. Addition now to the bathing fluid of the drugs usually used in such an experiment, epinephrin, pilocarpin, atropin, physostigmin, barium and pituitary extract, showed that in every case the addition of the drug was followed by a perfectly normal response—contraction or relaxation, as the case might be. The result in each tissue from each animal was, of course, compared with normal controls. The only difference to be found was in the duration of life of the tissue under examination. As is well known, normal tissues preserved in this manner will retain their vitality and activity for hours, while we found that the tissues removed immediately after death caused by botulism would remain active for only a short time—for half an hour usually, but rarely for an hour. However, so far as the qualitative reaction is concerned, the tissues from all parts of the gastro-intestinal tract reacted to stimuli in a normal manner, affording, therefore, no explanation for the difficulty in swallowing, for the paralysis of the stomach which several writers have described, or for the obstinate constipation observed in human cases. The explanation must be sought outside the gastro-intestinal tract, either in the central nervous system or in the extrinsic nerves. The addition of pure toxin to the fluid bathing normal tissues had no appreciable effect on their activity.

Our next examination was as to the effect of the toxin on the circulatory apparatus when it is injected intravenously in acute experiments. These experiments were carried out on rabbits, cats and dogs. The toxin showed itself to be surprisingly harmless when injected in this way. The injection of 1 or 2 c.c. doses of pure toxin diluted with a little salt solution had little effect beyond a slight lowering of blood pressure and some acceleration of the heart, the rate increasing from a normal of 180 to 200 or 210. Records of the contractions of the two chambers of the dog's heart showed a slight weakening, especially of the auricles, followed by augmentation. These changes, which will not be discussed at greater length at this time, were greatly exceeded in interest by depression of the vagus nerve, which appeared in varying degrees in different animals. This is evidently the "block" referred to by Dickson in his paper. As the toxin was being injected in small doses frequently repeated, a gradually lessened response on the part of the vagus was noted until, after 15 or 20 c.c., the vagus of a cat or rabbit was almost inactive. In most cases recovery was fairly rapid. In a number of dogs we were unable to demonstrate this action on the vagus, but in one we succeeded in getting a total paralysis from the injection of a small dose of toxin. Also in one or two other dogs and cats and in one cock, in all of which, after normal respiration had ceased, and the heart had been kept going under artificial respiration, the vagus was tested and found to be without action on the heart. Numerous variations in vagus response were found during the acute experiments, one of the common ones being that stimulation of the vagus after the injection of the toxin was ineffective for perhaps fifteen seconds, as it produced no slowing, but would lower the blood pressure; this was followed by a lessened rate for a few seconds, which might again pass off. It would appear that certain fibers might be depressed, while others would not be attacked to a like extent. We expect to examine into the causes of these changes later.

As will be seen, these acute injection experiments did not throw much light on the cause of the clinical manifestations of the condition in man. They had, however, furnished the key to the solution of the matter, viz., in the condition of the vagus.

In order to examine into these changes further, we changed our method of attack and injected lethal doses of the toxin into animals, and then endeavored to get the animals at the moment of death. We then either examined the reaction of the tissue at that time, or, in the larger animals, we kept the circulation going under artificial respiration. This brings up an important point, namely, that animals never die of cardiac failure in botulism. It is always failure of the respiration which kills, and if respiration by artificial means be instituted, the animal's life can always be prolonged, as we shall discuss later. Many times in the literature it is stated that in this condition death is due to respiratory or cardiac failure. It would seem doubtful whether in man also death ever occurs in cases of pure botulism from failure of the heart. Some of the more recent writers do say that the heart beats after the respiration has stopped, thus confirming our views gained from an extensive experience with animals.

We shall first consider the results obtained in lethal experiments with guinea-pigs. These animals were all examined at the moment that respiration ceased. Of course, it goes without saying that many animals were lost, as they died at night or in the early morning hours when no one was around to make the necessary examinations. With the larger animals, after some experience, we found it possible to make a closer estimate as to the probable duration of life, and so most of them were saved for investigation.

Following the examination of the heart, which we always found to be beating, the condition of the sciatic and phrenic nerves was next investigated. In no case were they found to be normal. In about a quarter of the sciatic nerves examined, the response may be said to have been nearly normal—roughly speaking, 80 per cent. normal; in another quarter of the cases, they might be said to be from 25 to 50 per cent. normal, while the sciatic nerves in the remaining 50 per cent. of the cases were only very feebly active; that is, they could bring out a momentary contraction of the muscle and then cease to act. Even more striking was the difference in duration of response after death. The sciatic nerve of a normal pig, killed by a blow on the head, will remain active for from twenty to twenty-five minutes after death. With the botulinus pigs, on the other hand, even in those sciatic nerves which most closely approached normal, a response was never obtained later than six minutes after death. The muscles in every case seemed to give a normal response. Examination of the phrenic nerves yielded approximately the same results. About twenty-five per cent. were found to be about 80 per cent. normal; 25 per cent. may be said to be from 25 to 50 per cent. normal, while the remaining 50 per cent. were almost, or totally, inactive.

The results obtained on guinea-pigs were confirmed on cats. In six animals, the sciatic nerves were examined immediately after death. In one, they were found to give a good response, but the response ceased within five minutes after death, while in normal cats the sciatic nerve was found to give a response from thirty to forty minutes after death. In four cats the nerves were only feebly active, just bringing out a response when stimulated, and then ceasing to act. In two cats, the sciatic nerves were entirely inactive.

The phrenic nerves followed in general the same rule. Those in one animal gave a good initial response, which failed in five minutes; two were feebly active, and four were totally inactive. The diaphragm responded well to direct stimulation.

In cocks, the story was much the same; the sciatic nerves examined were found to be almost inactive—a contraction of the leg muscles would be brought out by stimulation of the nerve, but it immediately passed into a state of inactivity even with continued stimulation.

An examination into the condition of the motor nerves supplying the neck muscles was next made. Some of these were dissected out in cocks which were kept alive under artificial respiration, and these too were found to be almost inactive—a temporary contraction being all that could be obtained by their stimulation. In one of these botulinus cocks, an effort was made to localize more closely the action of the toxin as being on the nerve ending, or on the receptive substance. The nerve trunk being ineffective, and the muscle responding normally, the connection mechanism must be at fault. Therefore, in one of these cocks, in which sciatic stimulation was ineffective, the gastrocnemius was arranged to record its contractions on a kymograph by attachment of the tendon to a writing lever. As will be remembered, Langley [7] showed that in cocks the injection of nicotin will bring out a long sustained contraction, which in turn is antagonized by curare. These two drugs, acting after the nerve ending has degenerated, must produce their effects by acting on the receptive substance. Injections of nicotin into a botulinus cock in which the sciatic nerve was paralyzed produced the typical curve which was described by Langley, and it was antagonized by curare. These reactions demonstrated that the receptive substance was probably normal, and that the botulinus toxin had exerted its action on the histologic nerve ending. This being true for the cock's leg muscle and sciatic nerve, it would seem to be safe to transfer the point of toxin action also to the phrenic nerve, and the peripheral nerves elsewhere. Also in such a cock the vagus was found to be almost inactive. A heart rate of 162 a minute was slowed to 150, and in another case from 152 to 138.

In dogs we have not been able to carry the work quite as far as in the other animals, but have found essentially the same condition of impaired activity on the part of the sciatic nerves indicated by lessened response and early failure. On the whole, however, the nerve ends in dogs seem to be more resistant than those in the smaller animals or in the cock. This is shown during life by the fact that very late in the intoxication, when the respiration is seriously disturbed, the dog will frequently make rather extensive movements—attempts at standing, or changes in position. These movements become more futile until it seems almost impossible for the animal to raise its head. At times, when the respiration has apparently ceased and the animal has been placed on the table for tracheotomy, it will make efforts at moving, and the respiration may be reinstated temporarily.

COMMENT

The essential action of the botulinus toxin is therefore a more or less complete paralysis of the motor nerve end plates in the striated muscles and in the diaphragm. There is also impairment in some other nerve endings, such as those of the vagus. The full significance of the latter changes we have not arrived at

7. Langley: J. Physiol. 33: 374, 1906.

thus far, but hope to report on them further in a later paper. All the truly characteristic symptoms of botulism, however, can be explained by the peripheral motor paralysis—the paralysis of the extrinsic eye muscles, the ptosis, the difficulty with talking, with protrusion of the tongue, and difficulty in swallowing. In the latter case, it is not the esophagus that seems to be at fault, but the nerves to the pharyngeal muscles, as patients say that if they can get the food past the pharynx it will go down. The increasing weakness in the legs, the relaxation of the abdominal wall, the early change in the respiration due to the paralysis of the diaphragm, all have the same origin, and the final failure of the respiration is due to the failure of the nerve endings in the respiratory muscles. It is a death due to peripheral causes, and not to failure of the respiratory center.

Late in poisoning, when the movements of the ribs are becoming weaker and weaker, there is just enough activity in the nerve ends to transmit the impulses to the respiratory muscles, and additional demands will result in death. This was illustrated well in one of the cats which was maintaining a respiration which was just adequate to its needs. One of us placed his hand lightly on the chest to get the heart rate, but even this slight pressure stopped the respiration, and the animal straightened out as though dying—as indeed it was. A tracheal tube was rapidly inserted, and artificial respiration instituted and maintained for three hours. At the end of that time, as we wished to examine the condition of the sciatic nerves, the artificial respiration was discontinued, but, to our surprise, the cat, after a few moments, started to breathe voluntarily and kept up an adequate respiratory movement until it was killed that we might make the examination mentioned.

The circulatory apparatus in these animals is apparently normal. In one cat, which had ceased to breathe and which had had artificial respiration for three hours, a carotid cannula was inserted and the blood pressure taken. It was found to be 170 mm. of mercury. Stimulation of a sensory nerve gave a good reaction, increasing the blood pressure to 200 mm.

In dogs, too, after hours of artificial respiration, blood pressures higher than 100 mm. have been found, thus making us think, as we said earlier, that in uncomplicated cases of botulism the cause of death is always failure of the respiration, and not of the heart.

FATE OF THE TOXIN IN THE BODY

We have made a few observations on the fate of the toxin in the body. In some of the dogs which have been poisoned with the toxin, we have withdrawn urine, with a syringe, from the bladder and have injected it intraperitoneally into guinea-pigs in doses as large as 5 or 10 c.c., but with no ill effects.

In the same way, we have withdrawn blood from the carotid of a dog which had been kept alive for twenty-four hours by artificial respiration, and have injected this into guinea-pigs and produced typical symptoms of botulism in the pig. The toxin, then, apparently is not excreted in the urine, but may be found in the blood of a dog seventy-two hours after it has been injected intraperitoneally, and twenty-four hours after the animal's respiration has ceased.

TREATMENT

These findings have led us to formulate certain ideas as to the best method of treatment of the poisoning in man. The first measure should, of course, be directed toward artificial respiration. We have tried this in dogs with a certain degree of success. We have kept a dog alive for thirty hours, and others, for shorter periods of time—the shortest time being six hours. There are, of course, difficulties in the way in animals, and doubtless in man. The question of dose of toxin is, of course, important. The idea is to tide persons over until they can destroy the poison. If there is an overwhelming dose, as in some of our animals, it may not be possible to do this. On the other hand, in certain cases, the dose of toxin ingested may not be great, and the question of a few hours extra may prove life-saving. The difficulty we have had thus far, and which we hope to obviate in the future, is that, with our method of carrying on artificial respiration wtih a bellows, we wash out the animal's carbon dioxid and it dies of carbon dioxid poverty, and not of botulism. Some time before death all reflexes disappear, the heart accelerates, and at postmortem it is found in complete systole. The condition coincides perfectly with that described years ago by Henderson,[8] and produced by him in animals by excessive respiration. In our dogs, the production of carbon dioxid is doubtless at a minimum, as they are lying quietly, and in many cases they are asleep from small doses of chlorbutanol which have been given to keep them from moving. On the other hand, the constant ventilation of the lungs with fresh air lowers the carbon dioxid until a point is reached below which life is impossible. We hope in further experiments to be able to overcome this difficulty. We believe that in human beings the difficulty would probably not be so great, as personal cooperation would be possible and an anesthetic not necessary. It is true that there is no machine which is satisfactory for the maintenance of artificial respiration in man, but the ordinary bellows connected with a tracheal cannula would suffice in the case of an emergency.

The question as to drug treatment naturally arises. It is clear from what has been said earlier in the paper that we have to do with a curare action, using this term in rather a loose sense and not distinguishing between nerve ending and receptive substance. For curare, it is well known that the best antagonist is physostigmin. Animals which have been paralyzed with curare can be recovered at times by physostigmin.

We have tried the effect of this alkaloid in only a few animals, but up to the present have not worked out a satisfactory dosage, and, in addition, the dogs we have been able to reach at just the right moment of cessation of the respiration, we have utilized to study the effect of artificial respiration and the condition of the circulatory system. In the few animals in which we have been able to try it, we have seen improvement. Cocks which have limber neck and have seemed to be totally paralyzed have, after a small dose of physostigmin, made efforts at standing and have shown more movement in the neck. All animals in which we have tried the alkaloid have responded with increased movements and a general improvement in symptoms. Our main difficulty up to this time has been with the question of dosage. We hope, with more material, and with a careful regulation of dose, to be able to report further progress at a later time. It is very important that the dosage in man should be carefully regulated until the reaction of the patient has been seen. This would apply especially to the increase of secretions along the respiratory tract, which, in case they became excessive,

8. Henderson, Yandell: J. Biol. Chem. 33: 355 (Feb.) 1918.

might be embarrassing. As to the effect on the skeletal muscles, the action of physostigmin is well known. In excessive doses, it is doubtless true that those muscles, the nerve ends of which still retain some activity, will react more than those which are more or less completely paralyzed. We have seen this in dogs with excessive dosage, in which cases convulsive movements might appear in the mouth and neck muscles, while the muscles of the hind legs remained totally inactive. An interesting result of a large dose of physostigmin was seen in one dog, which, as a result of botulism, was under artificial respiration, as its normal breathing had failed and there was almost total paralysis of the entire animal. Four milligrams of physostigmin was injected into the circulation, and in a short time the animal had a generalized convulsion lasting several minutes. This was followed by failure of the heart, and death.

In this brief discussion of the treatment of cases of human botulism, we have not gone into the use of the specific antitoxin or into the general care of the patient, but merely into those two lines of treatment which are suggested by our experimental work. We should have liked to be able to report more conclusive results on the effect of these two therapeutic measures, especially as to the effect of physostigmin; but, while continuing our experiments, we are offering them as suggestions, as, doubtless, cases of botulism will occur in isolated areas as in the past, and opportunity will be found of testing the value of the measures. Certainly, nothing in this newer knowledge of the pathologic physiology of the condition would give any grounds for thinking that there is any value to be expected from the use of any one of the numerous drugs that have been suggested in recent reviews of the therapeutics of the intoxication.

SUMMARY

There is in botulism a partial paralysis of the endings of the motor nerves going to the voluntary muscles. In some cases, this curare-like action is almost complete, as in the case of the nerves supplying the neck muscles of chickens. This action will explain all of the characteristic symptoms of botulism which are motor in origin. The involvement of the phrenic nerves explains the early paralysis of the diaphragm. The effect of the toxin on the nerves to the respiratory muscles is responsible for the gradually increasing weakness of the respiration, and for its final failure, which is responsible for death under this form of poisoning.

The involuntary muscle of the esophagus, stomach and intestine acts in a normal manner to epinephrin, physostigmin and other peripherally acting drugs, indicating that the symptoms, such as difficulty in swallowing, and constipation, are probably not due to an action of the toxin on structures located in the gastro-intestinal wall. The vagus nerve is also affected, as it largely loses its control over the heart rate, thus probably accounting for the accleration of the heart described in certain of the cases of human botulism.

The toxin is apparently not excreted in the urine, but may be demonstrated in the blood long after it has been injected.

On the basis of the experimental work, it is recommended that in cases of human botulism, when the respiration shows signs of failure, artificial respiration be instituted—if necessary, by means of bellows and a tracheal cannula. In dogs this procedure has given promise of success. The careful administration of physostigmin is also recommended.

Clinical Notes, Suggestions, and New Instruments

IMPROVED JONES EXTENSION ARM SPLINT

JOEL DENMAN, M.D., KANSAS CITY, MO.

The regular Jones extension arm splints are made for the right and for the left arm, with no provision for lengthening or shortening. I conceived the idea of sawing into the upper part of the splint, threading the ends with a right and left thread, and adding turnbuckles, as in the illustration. This gives a universal splint. Taking it apart and changing the threaded ends will make it either right or left. Also there is an adjustment of almost 3 inches. After the splint is applied and the fracture reduced, with adhesive plaster in place one can either increase or decrease the tension without disturbing the splint in any manner. This is easy to accomplish and inexpensive. I have found it very satisfactory to use and convenient.

Improved Jones extension arm splint.

My assistant, Dr. C. A. Sherman, deserves the credit for the illustration.

508 Chambers Building.

CESAREAN SECTION WITH TOTAL HYSTERECTOMY NECESSITATED BY CONGENITAL MALFORMATION OF VAGINA

J. E. COUNTRYMAN, M.D., AND J. C. SUTER, M.D.,
GRAFTON, N. D.

Miss O., aged 28, was admitted to the Deaconess Hospital, March 19, 1923, having been in labor eighteen hours, with pains on admission at five minute intervals and resembling those of a well advanced second stage. On routine examination it was apparent that an abnormality existed, but the patient was so unruly that an anesthetic was necessary to determine the condition present.

Fig. 1.—*A*, dilated urethra; *B*, sinus leading to vaginal pouch.

The external genital organs had the appearance of virginity; the labia majora were normal, and the space between was covered with mucous membrane. The urethral orifice was markedly dilated, easily admitting the index finger to the interior of the bladder. No vaginal outlet could at that time be determined, and it was supposed that the vagina opened into the bladder.

By rectal examination the head could be felt well down in the pelvis and the cervix about two thirds dilated.

A cesarean section with hysterectomy was the only solution of the problem, the latter being necessary as there could otherwise be no provision made for the discharge of the lochia.

The operation was completed with no shock to the patient. The hysterectomy was a little more difficult than usual on account of the increased vascularity of the broad ligaments. The child weighed 7 pounds, 8 ounces (3.5 kg.), was normal and vigorous, and appeared to be of full term. During operation, when the uterus was removed, the vaginal canal could

be readily determined as normal in its upper portion but ending abruptly with no outlet.

On further examination the day following operation, a bloody discharge was noticed coming from the urethra, and, by careful sponging, two small outlets were found opening on the sides of the urethral orifice, each having the diameter of a small probe, and being about 5 cm. in length, opening into the blind vaginal pouch.

The operation was followed by a smooth convalescence. Lactation was established and maintained as usual.

The patient gave a history of menstruation having been established at 15 years of age. The periods were regular and normal, and she apparently had no knowledge of any abnormality.

This case is also of interest from a medicolegal point of view on account of the fact that pregnancy took place from spermatozoa deposited at the urethral orifice, and in spite of

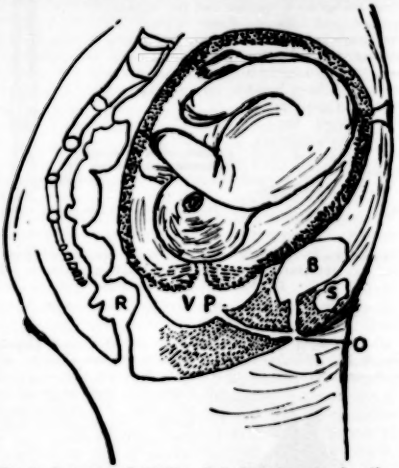


Fig. 2.—*R*, rectum; *B*, bladder; *V P*, Vaginal pouch; *O*, orifice of urethra; *S*, symphysis pubis.

the fact that a sinus of 5 cm. intervened between that point and the vaginal pouch.

The accompanying two illustrations will be of some assistance in the description of the abnormality.

UNUSUAL USES OF PARAFFIN-WAX DRESSINGS

L. D. McMillan, M.D., Onaway, Mich.

Case 1.—V. R., a girl, aged 8, was scalded by boiling water during the spring of 1922. The wound had healed with much cicatrization of the elbow and the adjacent portions of the arm, and with almost complete fixation in flexion of the elbow. May 7, 1923, I removed about a square inch of scar tissue contiguous to the healthy skin, and dressed the wound daily with surgical paraffin (parresine—Abbott), after the usual method used for burns. The defect filled in and became smoothly epithelialized in two weeks. Under general anesthesia, I then removed the main portion of the scar over an area of 20 square inches, including the anterior surface of the elbow, thus severing the tissue fixing the elbow and allowing the arm to be straightened and splinted in full extension. In two weeks, most of the defect was filled in and epithelialized. The splint was then removed and the same treatment applied on alternate days without the use of splints. In three weeks, healing was completed. Although the area treated was discolored, the surface was smooth, there was no contracture, and the child had recovered full use of the arm.

Case 2.—W. P., a man, aged 50, had five varicose ulcers of the leg, varying in diameter from 3 mm. to 2 cm. The anterior surface of the lower leg was erythematous and oozing in two places. There was a systolic murmur at the cardiac apex, not transmitted, and slight cardiac hypertrophy. The Wassermann reaction was negative. The blood pressure was 115. Treatment consisted of rest in bed, a preparation of digitalis, graduated exercises, and daily applications of surgical paraffin to the leg, after the method used for burns. The largest ulcer was filled in and epithelialized in two weeks, the others in three weeks, at which time erythema and oozing was nearly absent. The patient was then furnished with an elastic bandage and discharged with directions to refrain from work or other than the lightest exercise for several weeks. He has again returned after four weeks, having resumed light farm work immediately following discharge. Erythema and oozing are completely absent, and the leg, aside from slight discoloration, is entirely healed. This case is notable, as the patient reported that the erythema was of twenty years' duration, and that several physicians had failed to clear up the ulcers by the classical methods of treatment.

I have used this dressing with remarkable cosmetic effect after a large abscess and subsequent sloughing of the face.

IMPROVEMENT IN METHOD OF OPERATING IN FISSURE AND FISTULA

A. T. Custer, M.D., Indianapolis

Much improvement in the technic of rectal surgery has been made in the last five years, although there has been little improvement in the method of operating in fissure and fistula.

Having been frequently placed in a position of responsibility for a possible incontinence from operation for repair following unsuccessful primary operation, I have devised a method which I have not seen reported and which may prove of interest.

The technic is that usually accepted for fistula operation up to the point of severance of the sphincter muscles. In other words, all tissue is severed on a grooved director until the sphincters appear in sight. All tissue is dissected away from sphincters, the fistulous tract is curetted and carefully cleaned out, and the wound is packed in the usual manner, leaving the sphincter muscles intact at the site of operation. Opposite the site of operation or at the point of election in healthy tissue, a tenotomy knife is introduced through the skin near the anal margin, and the sphincter muscles are partially or completely severed, as seems best. This produces the desired paralysis of the muscle, obviating injury to the mucous membrane of the bowel and eliminating danger of nonunion in the diseased area.

I have used this method in both fissure and fistula operations when paralysis of the muscle is necessary, with excellent results.

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. Puckner, Secretary.

LUMINAL (See New and Nonofficial Remedies, 1923, p. 63).

The following dosage form has been accepted:

Elixir of Luminal.—Each 4 Cc. (one fluidrachm) contains **0.15 Gm.** (2½ grain) in a menstruum containing alcohol 20 per cent.

SCARLET R MEDICINAL BIEBRICH (See New and Nonofficial Remedies, 1923, p. 275).

Scarlet Red Medicinal-"National."—A brand of scarlet R medicinal Biebrich-N. N. R.

Manufactured by the National Aniline and Chemical Co., New York. No U. S. patent or trademark.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1923 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The tabulated statistics herewith presented are for the year ending June 30, 1923, and are based on reports received from the medical colleges and other reliable sources. We acknowledge here the splendid courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1, on pages 550, 551, gives the colleges in session during 1922-1923; the population of the city; the rating given to the college by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1923 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 561 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 554, 555, shows from what state the students came who were in attendance at each medical college during the session of 1922-1923. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college, is interesting. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York with 2,423. Illinois contributed 1,317 and Pennsylvania, 1,294. The next states in the order of the number of students contributed, are: Ohio, 972; Massachusetts, 707; Michigan, 652; California, 642; Texas, 564; Missouri, 562. Two states had less than 10 each, these being Nevada, 4, and Wyoming, 8. There were 111 students from Hawaii, Porto Rico and the Philippine Islands, and 368 students from foreign countries.

NUMBER OF STUDENTS BY CLASSES

In Table 3, on page 556, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 5,162, as compared with 5,412 last year, and 4,825 in 1921. The second year attendance was 4,615, as compared with 4,219 last year, and 3,588 in 1921. The third year attendance was 3,861, as compared with 3,355 last year, and 2,637 in 1921. The enrolment of the fourth and fifth (intern) years, combined this year, is 3,794, as compared with 3,154 last year, and 3,822 in 1921. The first year shows a decrease of 250, while the second, third and fourth year class enrolments show increases, respectively, of 396, 506 and 640 over the enrolments in those classes last year. The increases in the total enrolment for 1920, 1921, 1922 and 1923, respectively, were 1,036, 784, 1,268 and 1,292—an average of 1,095 each year.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (Table 4) in the United States for the year ending June 30, 1923, excluding premedical, special and postgraduate students, was 17,432, an increase of 1,292 over last year. This is the largest enrolment of students since 1912. Of the total number of students, 16,771 were in attendance at the nonsectarian (regular) colleges, 341 at the homeopathic, 99 at the eclectic, and 221 at the three nondescript colleges.

TABLE 4.—*Medical College Attendance*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880	9,776	1,220	830	...	...	11,826
1900	13,521	1,164	719	...	...	15,404
1910	22,710	1,909	522	...	...	25,171
1911	23,846	1,683	694	80	144	26,417
1912	24,878	1,617	765	91	159	27,501
1913	24,980	1,469	868	149	190	27,615
1914	23,682	1,309	1,014	122	234	28,142
1915	24,119	1,104	579	114	232	26,147
1916	23,116	1,085	644	110	249	25,304
1917	22,308	1,089	545	97	292	24,276
1918	20,994	891	479	90	208	22,662
1919	20,554	899	413	32	227	22,145
1920	20,136	887	455	49	19	21,536
1921	18,414	890	422	49	...	19,776
1922	17,277	827	308	...	...	18,412
1923	15,919	850	256	...	...	17,015
1924	15,438	794	270	...	...	16,502
1925	13,914	726	241	...	...	14,891
1926	13,121	638	262	...	...	14,012
1927	12,925	560	250	...	...	13,764
1918	12,727	540	120	...	225	13,630
1919	12,250	397	88	...	310	13,052
1920	13,220	386	93	...	360	14,060
1921	14,033	440	98	...	301	14,872
1922	15,247	517	85	...	291	16,140
1923	16,771	341	99	...	221	17,432

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1923, was 3,120, or 591 more than last year. The number of graduates from the nonsectarian colleges was 2,984, or 626 more than last year. The number from the homeopathic colleges was 49, or 15 less

(Continued on page 552)

1. State Board Number, J. A. M. A. 80: 1220-1225 (April 23) 1923.

TABLE 1—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is located (United States Bureau Estimate of 1923)	Classification by Council on Med. Ed. Jurisdiction	No. of Students Registered 1922-23 Men	No. of Students Registered 1922-23 Women	Graduates 1923 Men	Graduates 1923 Women	Grads. with A.B., B.S., or Ph.B.	Number of Teachers in College	Weeks in Year	Total Fees (Dollars) 1st year	Total Fees (Dollars) 2d year	Total Fees (Dollars) 3d year	Total Fees (Dollars) 4th year	Executive Officer	Session of 1923-24 Begins 1923	Session of 1923-24 Ends 1924	Marginal Number
	ALABAMA																	
1	University of Alabama School of Medicine, University (Tuscaloosa)*	11,996	A	71	..	..	..	..	12	34	236	236	...	...	Clyde Brooks, M.D., Dean	Sept. 12	May 27	1
	ARKANSAS																	
2	University of Arkansas Medical Department, Little Rock	65,142	A	71	..	..	..	..	54	34	70	75	75	...	Morgan Smith, M.D., Dean	Sept. 19	June 6	2
	CALIFORNIA																	
3	College of Medical Evangelists, Los Angeles	576,673	A	200	22	30	5	32	134	36	236	231	221	226	P. T. Magan, M.D., Dean	Sept. 5	June 3	3
4	Stanford University School of Medicine, San Francisco	508,676	A	138	30	30	2	21	145	34	261	261	261	261	William Ophüls, M.D., Dean	Oct. 2	June 16	4
5	University of California Medical School, San Francisco †	508,676	A	250	47	52	7	25	230	35	260	246	235	225	L. S. Schmitt, M.D., Acting Dean	Aug. 20	May 14	5
	COLORADO			168	16	22	1	6										
6	University of Colorado School of Medicine, Denver †	256,491	A	160	15	22	1	6	56	34	144	144	139	135	Charles N. Meeder, M.D., Dean	Sept. 26	June 9	6
	CONNECTICUT			164	8	31	..	26										
7	Yale University School of Medicine, New Haven	162,537	A	164	8	31	..	26	122	34	305	300	300	290	Milton C. Winternitz, M.D., Dean	Sept. 27	June 11	7
	DISTRICT OF COLUMBIA			676	76	78	8	49										
8	Georgetown University School of Medicine, Washington	437,571	A	188	..	34	..	14	98	34	215	200	200	210	George M. Kober, M.D., Dean	Sept. 27	June 11	8
9	George Washington University Medical School, Washington	437,571	A	172	8	19	1	8	114	38	241	238	238	238	William C. Borden, M.D., Dean	Sept. 26	June 4	9
10	Howard University School of Medicine, Washington	437,571	A	210	8	25	2	12	40	32	165	155	155	165	Edward A. Balloch, M.D., Dean	Oct. 1	June 6	10
	GEORGIA			310	1	61	..	29										
11	Emory University School of Medicine, Atlanta	200,616	A	210	1	30	..	29	113	32	228	221	225	250	William S. Elkin, M.D., Dean	Sept. 26	June 3	11
12	University of Georgia Medical Department, Augusta †	52,548	A	101	1	30	..	7	50	34	65	60	60	60	Harry Goodrich, M.D., Dean	Sept. 19	June 2	12
	ILLINOIS			2662	152	557	25	241										
13	Chicago Medical School, Chicago	2,701,705	C	150	6	27	2	..	..	..	190	185	185	215	.....	.....	.....	13
14	General Medical College †	2,701,705	A	170	5	28	2	11	111	32	250	250	250	250	John C. Bliss, Ph.D., Dean	Oct. 1	June 10	14
15	Loyola University School of Medicine, Chicago	2,701,705	A	258	11	27	1	8	120	34	275	275	250	250	Louis D. Moorhead, M.D., Dean	Oct. 1	June 14	15
16	Northwestern University Medical School, Chicago	2,701,705	A	465	..	84	..	44	165	34	190	190	200	200	Arthur I. Kendall, M.D., Dean	Oct. 2	June 14	16
17	Rush Medical College (University of Chicago)	2,701,705	A	568	90	125	13	135	294	34	225	225	240	240	Ernest Edward Irons, M.D., Acting Dean	Oct. 1	June 14	17
18	University of Illinois College of Medicine, Chicago †	2,701,705	A	416	39	62	5	43	201	32	165	165	165	165	Albert C. Eycleshymer, M.D., Dean	Oct. 1	June 7	18
	INDIANA			319	14	85	3	66										
19	Indiana University School of Medicine, Bloomington-Indianapolis	314,194	A	313	14	85	3	55	165	35	125	125	150	150	Charles P. Emerson, M.D., Dean	Sept. 17	June 11	19
	IOWA			280	8	62	2	24										
20	State University of Iowa College of Medicine, Iowa City †	11,267	A	280	8	62	2	24	79	33	175	150	150	160	Lee Wallace Dean, M.D., Dean	Sept. 24	June 3	20
	KANSAS			91	4	18	1	12										
21	University of Kansas School of Medicine, Lawrence-Rosedale †	453,361	A	91	4	18	1	12	62	35	131	131	133	133	Mervin T. Sudler, M.D., Dean	Sept. 17	June 5	21
	KENTUCKY			184	8	28	1	8										
22	University of Louisville Medical Department, Louisville	234,891	A	184	8	28	1	8	100	36	260	260	270	280	Stuart Graves, M.D., Dean	Sept. 3	June 5	22
	LOUISIANA			345	14	73	4	36										
23	Tulane University of Louisiana School of Medicine, New Orleans	387,219	A	345	14	73	4	36	142	34	225	225	215	245	Charles C. Bass, M.D., Dean	Sept. 27	June 11	23
	MARYLAND			638	83	129	15	116										
24	Johns Hopkins University Medical Department, Baltimore	733,826	A	238	45	79	14	93	219	33	318	317	317	317	J. Whitridge Williams, M.D., Dean	Oct. 1	June 10	24
25	Univ. of Maryland School of Med. and Coll. of P. & S., Baltimore†	733,826	A	327	8	50	1	23	199	33	265	265	265	265	J. M. H. Rowland, M.D., Dean	Oct. 1	June 7	25
	MASSACHUSETTS			1220	69	291	11	123										
26	Boston University School of Medicine, Boston	748,060	A	150	34	99	4	11	92	35	256	256	256	256	Alexander S. Begg, M.D., Dean	Sept. 27	June 16	26
27	College of Physicians and Surgeons, Boston *	748,060	C	5	2	5	1	..	..	..	165	140	130	115	.....	.....	.....	27
28	Harvard University Medical School, Boston	748,060	A	495	..	126	..	103	275	35	305	300	300	300	David L. Edsall, M.D., Dean	Sept. 24	June 19	28
29	Tufts College Medical School, Boston	748,060	A	442	30	69	4	9	145	33	260	245	235	240	Stephen Rushmore, M.D., Dean	Sept. 24	May 29	29
30	Middlesex College of Medicine and Surgery, Cambridge.—N.	109,694	C	68	7	17	2	..	37	36	175	175	175	175	Roger S. York, M.D., Dean	Sept. 17	June 14	30
	MICHIGAN			770	68	183	9	68										
31	Detroit College of Medicine and Surgery, Detroit †	993,678	A	170	6	1	..	..	119	35	50	50	50	50	W. H. MacCraken, M.D., Dean	Oct. 1	June 21	31
32	University of Michigan Medical School, Ann Arbor † *	19,516	A	600	62	105	9	52	188	35	180	180	180	180	Hugh Cabot, M.D., Dean	Sept. 25	June 16	32
	MINNESOTA			444	30	78	7	65										
33	University of Minnesota Medical School, Minneapolis †	380,582	A	444	30	78	7	65	260	35	199	199	199	199	Elias P. Lyon, M.D., Dean	Sept. 26	June 18	33
	MISSISSIPPI			55	2	..	..	..										
34	University of Mississippi School of Medicine, Oxford *	2,189	A	55	2	..	..	..	19	34	156	156	...	...	Walter S. Leathers, M.D., Dean	Sept. 19	June 8	34
	MISSOURI			288	28	288	13	107										
35	University of Missouri School of Medicine, Columbia * †	10,392	A	76	8	..	..	..	27	34	100	100	...	...	Guy L. Noyes, M.D., Dean	Sept. 11	June 4	35
36	Kansas City College of Medicine and Surgery, Kansas City.—N. * †	432,361	†	32	8	30	3	1	..	..	200	200	200	200	.....	.....	.....	36
37	Kansas City Univ. of Physicians and Surgeons, Kansas City.—N...	432,361	C	53	5	25	1	1	26	34	180	180	180	180	A. M. Wilson, M.D., Dean	Sept. 10	May 29	37
38	St. Louis College of Physicians and Surgeons, St. Louis *	772,897	C	57	8	33	5	..	..	..	205	200	200	225	.....	.....	.....	38
39	St. Louis University School of Medicine, St. Louis	772,897	A	200	..	77	..	76	179	32	300	300	300	300	Hanau W. Loeb, M.D., Dean	Oct. 1	May 31	39
40	Washington University School of Medicine, St. Louis	772,897	A	248	16	48	4	30	158	34	315	310	310	315	Nathaniel Allison, M.D., Dean	Sept. 27	June 12	40
	NEBRASKA			402	17	92	4	69										
41	Creighton University College of Medicine, Omaha	191,601	A	152	2	25	..	25	70	33	195	190	190	200	Hermann von W. Schulte, M.D., Dean	Sept. 21	May 31	41
42	University of Nebraska College of Medicine, Omaha	191,601	A	250	15	54	4	45	95	34	165	160	150	150	Irving S. Cutter, M.D., Dean	Sept. 24	June 7	42
	NEW HAMPSHIRE			44	..	..	..	..										
43	Dartmouth Medical School, Hanover *	1,551	A	44	..	..	..	..	13	36	250	250	...	...	John M. Gile, M.D., Dean	Sept. 20	June 18	43

	NEW YORK		1911	166	494	49	221														
44	Albany Medical College, Albany	112,344	A	84	4	12	2	4	107	34	235	220	205	205	Thomas Ordway, M.D., Dean	Sept. 24	June 10	44
45	University of Buffalo Medical Department, Buffalo	506,775	A	220	17	46	3	9	134	34	322	312	312	312	C. Sumner Jones, M.D., Dean	Sept. 26	June 11	45
46	Columbia University College of Phys. and Surgs., New York City	5,620,048	A	357	44	95	12	36	262	33	352	352	352	352	William Darrach, M.D., Dean	Sept. 26	June 4	46
47	Cornell University Medical College, New York City	5,620,048	A	212	44	52	11	63	173	34	345	335	335	350	Walter L. Niles, M.D., Dean	Sept. 24	June 12	47
48	Long Island College Hospital, New York City-Brooklyn	5,620,048	A	332	14	79	6	12	134	33	356	350	340	380	Adam M. Miller., M.D., Dean	Sept. 24	May 29	48
49	New York Homeopathic Medical College and Flower Hospital—H.	5,620,048	B	145	10	18	..	2	86	34	350	300	300	300	Israel S. Kleiner, Ph.D., Acting Dean	Sept. 21	June 5	49
50	University and Bellevue Hospital Medical College, New York City	5,620,048	A	414	71	96	6	19	237	35	350	350	350	350	Samuel A. Brown, M.D., Dean	Sept. 19	June 11	50
51	Syracuse University College of Medicine, Syracuse	171,717	A	164	10	35	..	25	117	35	324	324	324	334	Herman G. Weiskotten, M.D., Acting Dean	Sept. 19	June 14	51
	NORTH CAROLINA		138	1	..	..	..											
52	University of North Carolina School of Medicine, Chapel Hill *	1,483	A	75	1	..	..	..	25	34	195	195	..	..	I. H. Manning, M.D., Dean	Sept. 29	June 6	52
53	Wake Forest College School of Medicine, Wake Forest *	1,425	A	63	..	..	..	..	15	34	300	300	..	..	Thurman D. Kitchin, M.D., Dean	Sept. 25	June 13	53
	NORTH DAKOTA		38	..	..	..	..											
54	Univ. of North Dakota School of Med., University (Grand Forks)*	14,010	A	38	..	..	..	..	18	34	50	50	..	..	H. E. French, M.D., Dean	Sept. 22	June 11	54
	OHIO		705	46	124	11	183											
55	Eclectic Medical College, Cincinnati.—E.	401,247	B	90	16	..	..	3	46	32	170	160	160	160	R. L. Thomas, M.D., Dean	Sept. 14	May 14	55
56	University of Cincinnati College of Medicine	401,247	A	221	15	54	5	39	116	35	320	320	270	315	Henry Page, M.D., Dean	Sept. 21	June 14	56
57	Western Reserve University School of Medicine, Cleveland	700,841	A	168	10	27	3	30	103	34	275	265	250	260	Carl A. Hamann, M.D., Dean	Sept. 27	June 12	57
58	Ohio State University College of Medicine, Columbus †	237,031	A	226	30	37	3	31	107	33	153	153	153	153	Eugene F. McCampbell, M.D., Dean	Oct. 1	June 6	58
	OKLAHOMA		134	2	24	..	22											
59	University of Oklahoma School of Medicine, Norman-Oklahoma City	91,295	A	134	2	24	..	22	73	34	62	70	50	50	LeRoy Long, M.D., Dean	Sept. 17	June 4	59
	OREGON		169	15	23	3	13											
60	University of Oregon Medical School, Portland †	258,288	A	169	15	23	3	15	105	34	185	180	180	180	Richard B. Dillehunt, M.D., Dean	Oct. 1	June 14	60
	PENNSYLVANIA		1042	105	235	28	102											
61	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,823,779	A	163	..	31	..	11	116	32	260	257	257	279	William A. Pearson, M.D., Dean	Oct. 1	June 5	61
62	Jefferson Medical College of Philadelphia	1,823,779	A	506	..	147	..	63	165	33	325	325	325	325	Ross V. Patterson, M.D., Dean	Sept. 25	June 6	62
63	Temple University School of Medicine, Philadelphia	1,823,779	B	130	1	24	1	..	131	34	220	225	215	215	Frank C.Hammond, M.D., Dean	Sept. 24	June 13	63
64	University of Pennsylvania School of Medicine, Philadelphia † ‡	1,823,779	A	417	32	110	15	68	216	35	325	325	325	329	William Pepper, M.D., Dean	Sept. 26	June 18	64
65	Woman's Medical College of Pennsylvania, Philadelphia	1,823,779	A	..	119	..	21	13	90	34	273	270	277	280	Martha Tracy, M.D., Dean	Sept. 26	June 11	65
66	University of Pittsburgh School of Medicine, Pittsburgh	588,343	A	180	14	30	3	27	145	34	328	313	312	322	Raleigh R. Huggins, M.D., Dean	Sept. 24	June 11	66
	SOUTH CAROLINA		126	6	24	1	12											
67	Medical College of the State of South Carolina, Charleston	67,957	A	126	6	24	1	12	65	33	165	165	165	165	Robert Wilson, J., M.D., Dean	Sept. 27	June 5	67
	SOUTH DAKOTA		39	1	..	..	..											
68	University of South Dakota College of Medicine, Vermilion *	2,500	A	39	1	..	..	..	12	36	60	60	..	..	Christian F. Lommen, B.S., Dean	Sept. 17	June 14	68
	TENNESSEE		542	6	122	2	60											
69	University of Tennessee College of Medicine, Memphis †	162,351	A	170	6	21	1	6	144	33	207	202	202	227	James B. McElroy, M.D., Acting Dean	Oct. 1	June 9	69
70	University of West Tennessee Medical Department, Memphis *	162,351	C	7	..	3	..	..	..	..	..	..	..	..	..	..	..	70
71	Meharry Medical College, Nashville	118,342	A	165	2	61	2	36	64	31	162	152	152	172	John J. Mullowney, M.D., President	Oct. 2	May 22	71
72	Vanderbilt University School of Medicine, Nashville	118,342	A	197	..	38	..	8	95	34	165	165	165	190	Lucius E. Burch, M.D., Dean	Sept. 28	June 11	72
	TEXAS		288	26	65	4	16											
73	Baylor University College of Medicine, Dallas	158,976	A	154	10	15	2	4	93	32	208	198	188	188	Walter H. Moursund, M.D., Dean	Oct. 1	May 31	73
74	University of Texas School of Medicine, Galveston †	44,255	A	297	15	40	2	12	51	32	108	73	45	53	William Keiller, M.D., Dean	Oct. 1	May 31	74
	UTAH		38	1	..	..	..											
75	University of Utah School of Medicine, Salt Lake City *	118,110	A	38	1	..	..	..	26	34	150	150	..	..	Ralph O. Porter, M.D., Dean	Sept. 27	June 10	75
	VERMONT		122	8	22	..	6											
76	University of Vermont College of Medicine, Burlington †	22,779	A	122	8	22	..	6	44	36	200	200	200	225	Henry Crain Tinkham, M.D., Dean	Sept. 19	June 20	76
	VIRGINIA		437	16	66	2	34											
77	Medical College of Virginia, Richmond	171,667	A	245	12	41	2	8	125	35	220	220	220	250	Manford Call, M.D., Dean	Sept. 12	June 3	77
78	University of Virginia Department of Medicine, Charlottesville	10,688	A	192	4	27	..	16	46	36	235	235	185	175	Theodore Hough, Ph.D., Dean	Sept. 13	June 10	78
	WEST VIRGINIA		103	1	..	..	..											
79	West Virginia University School of Medicine, Morgantown * †	12,127	A	103	1	..	..	..	15	35	90	90	..	..	John N. Simpson, M.D., Dean	Sept. 17	June 10	79
	WISCONSIN		248	18	19	1	19											
80	University of Wisconsin Medical School, Madison * †	38,378	A	149	18	..	..	..	66	36	115	95	..	..	Charles R. Bardeen, M.D., Dean	Sept. 26	June 23	80
81	Marquette University School of Medicine, Milwaukee	457,147	A	99	..	19	1	19	116	33	305	295	295	275	Eben J. Carey, Sc.D., Dean	Oct. 1	June 11	81
	PHILIPPINE ISLANDS		882	31	59	3	10											
82	University of the Philippines, College of Med. and Surg., Manila	396,943	..	99	31	14	3	10	74	36	79	64	64	56	Fernando Calderon, M.D., Dean	June 15	Mar. 18	82
83	University of St. Thomas, College of Med. and Surg., Manila †	396,943	..	60	..	45	..	..	24	36	58	62	62	62	José L. de Castro, M.D., Dean	July 3	Mar. 31	83
	CANADA *		2529	132	472	28	64											
84	University of Alberta Faculty of Medicine, Edmonton, Alta.	60,000	..	89	13	..	..	..	62	35	130	180	180	180	Allan C. Rankin, M.D., Dean	Sept. 24	May 16	84
85	Dalhousie University Faculty of Medicine, Halifax, N. S.	46,619	..	140	9	18	2	4	52	32	123	300	300	300	John Stewart, M.D., Dean	Sept. 10	May 13	85
86	Queen's University Faculty of Medicine, Kingston, Ont.	18,874	..	200	2	30	..	6	59	33	141	146	141	155	J. C. Connell, M.D., Dean	Sept. 26	May 28	86
87	University of Toronto Faculty of Medicine, Toronto, Ont.	376,538	..	904	72	183	14	12	178	33	163	163	163	163	Alexander Primrose, M.D., Dean	Sept. 25	May 31	87
88	University of Western Ontario Medical School, London, Ont.	46,300	..	116	8	23	..	2	59	32	155	155	163	161	Paul S. McKibben, Ph.D., Dean	Oct. 1	May 30	88
89	McGill University Faculty of Medicine, Montreal, Que.	470,480	..	709	12	124	2	27	150	33	222	222	222	222	C. F. Martin, M.D., Dean	Sept. 24	June 1	89
90	University of Montreal Medical Faculty, Montreal, Que.	470,480	..	200	..	59	..	..	81	36	207	200	242	215	Louis de Lotbiniere Harwood, M.D., Dean	Sept. 15	June 15	90
91	Laval University Faculty of Medicine, Quebec, Que.	78,190	..	170	7	9	1	6	27	34	135	135	135	135	Arthur Vallée, M.D., Secretary	Sept. 13	May 31	91
92	University of Manitoba Faculty of Medicine, Winnipeg	136,035	..	241	22	39	2	5	114	33	180	175	185	185	S. Willis Prowse, M.D., Dean	Sept. 18	May 18	92

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

† The following universities make an additional charge for nonresidents: California, $300; Colorado, $30; Georgia, $60; Illinois, $35; Iowa, $200; Kansas, $10; Maryland, $50; Michigan, $80; Detroit, $150; Minnesota, $30; Missouri, $10; Ohio, $147; Oregon, $60; Tennessee, $100; Texas, $150; Vermont, $100; West Virginia, $150; Wisconsin, $95.

1. The General Medical College succeeds the Hahnemann Medical College and Hospital, Chicago, which was a Class B institution. The new school is at present unclassified.

2. The number of students is approximate; the number of graduates is exact.

3. Two medical schools make a lower tuition charge for women than for men. The charge is $5.00 less each year at the University of Michigan and $15.00 less at the University of Pennsylvania.

4. This college is an offshoot of a Class C institution, which has since ceased to exist. Inspections have been refused by the new institution but sufficient information is on file to show that it could not be given a rating higher than Class C. It is reported not recognized by the licensing boards of forty-one states.

5. The numbers of students and graduates are approximate.

6. The University of West Tennessee closed its Medical Department with the session which ended in May, 1923.

7. The figures given are for the session of 1921-1922.

8. Of the Canadian medical schools, the University of Alberta gives the first five years of the six year medical course. All others give the six years. The first one or two years are devoted to subjects which in the United States are referred to as "premedical."

(Continued from page 549)

than last year, and from the eclectic colleges there were 16, or 18 less than last year. The three nondescript colleges had 71 graduates, or 2 less than last year.

TABLE 5.—*Medical College Graduates*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	2,673	390	198	..	..	3,241
1890.....	3,853	300	221	..	..	4,454
1900.....	4,715	413	86	..	..	5,214
1901.....	4,879	387	148	18	12	5,444
1902.....	4,508	326	139	16	11	5,000
1903.....	5,008	420	149	24	17	5,618
1904.....	5,190	371	146	20	20	5,747
1905.....	5,128	376	158	22	23	5,809
1906.....	4,641	286	185	22	20	5,154
1907.....	4,594	225	121	11	22	4,969
1908.....	4,370	215	116	22	23	4,741
1909.....	4,163	209	84	15	44	4,515
1910.....	4,113	183	114	16	16	4,440
1911.....	4,066	153	119	8	..	4,373
1912.....	4,206	185	92	..	..	4,483
1913.....	3,679	209	93	..	..	3,981
1914.....	3,370	154	70	..	..	3,594
1915.....	3,280	195	55	..	..	3,530
1916.....	3,276	168	78	..	..	3,518
1917.....	3,134	180	65	..	..	3,379
1918.....	2,454	114	42	..	69	2,670
1919.....	2,423	80	79	..	116	2,698
1920.....	2,826	97	30	..	94	3,047
1921.....	2,969	115	39	..	78	3,192
1922.....	2,358	64	34	..	73	2,529
1923.....	2,984	49	16	..	71	3,120

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,120 medical graduates, 1,787 (see Table 6) also obtained degrees in arts or science, or 332 more than last year. There has been a steady increase since 1910, when attention was first called to this item. This year 57.2 per cent. of all graduates held collegiate degrees, as compared with 57.5 per cent. last year and with only 15.3 per cent. in 1910. This increase is what was expected under the general adoption by medical schools of the entrance requirement of two years of college work. Of the 2,984 nonsectarian school graduates, 1,770, or 59.3 per cent., were reported to have baccalaureate degrees; of the 49 homeopathic graduates,

TABLE 6.—*Medical Graduates with Liberal Arts Degrees*

Year	Nonsectarian			Homeopathic			Eclectic			Totals		
	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.
1910	4,113	684	16.1	183	13	7.1	114	3	2.6	4,440	699	15.3
1911	4,066	692	17.0	153	18	11.8	110	4	3.6	4,373	714	16.5
1912	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913	3,679	732	19.9	209	20	9.6	93	1	1.1	3,981	753	18.9
1914	3,370	794	23.5	154	7	4.5	70	6	8.6	3,594	807	22.5
1915	3,280	829	25.3	195	16	8.2	55	3	5.5	3,530	848	24.3
1916	3,274	393	26.8	168	20	12.0	78	...	...	3,518	942	26.9
1917	3,134	1,078	34.4	180	19	10.5	65	2	3.1	3,379	1,099	32.5
1918*	2,454	1,007	41.0	114	15	13.2	60	...	...	2,670	1,094	39.4
1919*	2,423	1,162	48.0	80	16	15.0	39	2	7.1	2,698	1,180	44.4
1920*	2,826	1,347	46.2	97	11	11.3	30	3	10.0	3,043	1,321	42.5
1921*	2,969	1,447	48.2	115	33	28.7	30	...	...	3,192	1,485	46.0
1922*	2,358	1,440	61.1	64	13	20.3	34	2	5.9	2,529	1,455	57.5
1923*	2,984	1,770	59.3	49	13	26.5	16	3	18.7	3,120	1,787	57.3

* Only two graduates of nondescript colleges were reported to have collegiate degrees during the last six years.

13, or 26.5 per cent., were so reported, and of the 16 eclectic graduates, 3, or 18.7 per cent., were so reported; and of the 71 graduates of the nondescript colleges only 1 was reported as holding a bachelor's degree in arts or science. As will be noted by referring to Table 11, of the 1,787 graduates holding baccalaureate degrees, 241—the largest number—came from the Illinois colleges. New York reported 221; Pennsylvania reported 180, and Maryland reported 116. The percentage of graduates holding collegiate degrees will probably continue to increase, since all the better medical schools are now requiring two years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees. Of the 4,234 students admitted by medical schools in 1919, 950, or 22.4 per cent., had already obtained baccalaureate degrees. It appears that 837 others obtained degrees through six or seven year combined courses. Of the 1,787 graduates who held baccalaureate degrees, therefore, about half secured them before beginning the study of medicine.

WOMEN IN MEDICINE

During the past year there were 1,030 women studying medicine, the largest number since 1905, when there were 1,073. The percentage of women to all medical students this year is 5.9. There were 214 women graduates this year, 60 more than last year. Of all the women matriculants, 119 were in attendance at the one medical college for women, while 911 (88.4 per cent.) were matriculated in the 65 coeducational colleges. From the one women's college there were 21

TABLE 7.—*Women in Medicine*

Year	Total Women Students	Percentage of All Students, Both Sexes	Total Women Graduates	Percentage of Graduates, Both Sexes	Women's Colleges	Students	Percentage of All Women Students	Graduates	Percentage of All Women Grads.	Co-ed. Schools	Students	Percentage of All Women Students	Graduates	Percentage of All Women Grads.
1904	1,129	4.3	244	4.0	3	182	16.2	50	23.0	97	945	83.8	193	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	16	852	79.4	165	75.5
1906	895	3.5	232	4.3	3	189	21.0	33	14.1	20	706	79.0	200	85.9
1907	928	3.7	211	4.2	3	220	22.6	39	18.5	18	708	77.4	172	81.5
1908	825	3.7	185	3.9	3	186	22.3	40	21.9	20	649	77.7	139	78.1
1909	921	4.2	162	3.7	3	149	18.4	32	20.3	16	732	81.6	129	79.7
1910	997	4.2	157	3.5	3	155	17.1	41	26.1	22	752	82.9	116	73.9
1911	889	3.4	159	3.7	3	134	19.7	39	22.8	74	545	80.3	132	77.4
1912	879	3.2	142	3.2	2	143	21.1	32	21.5	64	508	78.9	110	77.8
1913	840	3.8	154	3.8	2	138	21.0	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	121	3.4	2	135	21.4	25	20.7	54	496	78.6	96	79.3
1915	592	4.0	159	3.7	2	116	19.6	30	29.2	53	462	80.4	92	70.8
1916	599	4.0	134	3.8	2	102	18.0	29	20.0	51	484	82.0	105	80.0
1917	610	4.5	153	4.5	2	91	13.3	29	18.9	58	529	86.7	124	81.1
1918	581	4.3	105	4.0	2	70	12.0	12	11.3	60	511	87.9	94	88.7
1919	686	5.2	107	4.0	1	68	10.0	7	6.5	59	620	90.4	100	93.4
1920	818	5.8	134	4.4	1	80	10.9	12	9.0	64	727	89.1	122	91.0
1921	879	5.9	151	4.7	1	103	11.5	15	10.0	62	776	88.5	136	90.0
1922	989	6.1	154	6.1	1	171	12.2	22	20.8	67	764	77.8	122	79.2
1923	1,030	5.9	214	6.9	1	119	11.6	21	9.8	65	911	88.4	193	90.2

graduates, while 193 (90.2 per cent.) secured their degree from coeducational colleges. This high percentage of women students in coeducational colleges is not surprising, since in recent years most of the medical schools have thrown open their doors to women.

NUMBER OF COLLEGES

Since June 30, 1922, one medical college, the medical department of the so-called University of West Tennessee, a low grade school for negroes, has been closed, leaving 80 still existing. One homeopathic medical school, the Hahnemann Medical College of Chicago, is undergoing a reorganization on a nonsectarian basis. Of the 80 colleges, therefore, 74 are nonsectarian (regular), 2 are homeopathic, 1 is eclectic and 3 are nondescript. Two of these nondescript colleges, the Kansas City University of Physicians and Surgeons, and the Middlesex College of Medicine and

Surgery, are intimately connected with osteopathy or give liberal advanced standing to students of osteopathic colleges. The third, the Kansas City College of Medicine and Surgery, claims to be eclectic, but is reported as not so recognized by the National Eclectic Medical Association. These three colleges are reported as not recognized by the licensing boards of more than forty states.

TABLE 8.—*Medical Colleges*

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1850	44	3	4	1	..	52
1860	58	6	4	2	..	68
1870	69	5	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1901	125	22	10	2	1	160
1902	126	20	9	3	2	160
1903	126	20	9	3	2	160
1904	127	19	9	3	2	160
1905	125	19	9	3	2	158
1906	130	19	8	3	2	162
1907	127	18	9	3	2	159
1908	130	18	9	3	2	161
1909	115	13	8	1	1	149
1910	109	12	8	1	1	131
1911	101	12	7	..	..	122
1912	101	11	6	..	..	118
1913	92	10	5	..	..	107
1914	87	10	5	..	..	102
1915	83	9	4	..	..	96
1916	82	10	3	..	..	95
1917	83	9	4	..	..	96
1918	79	6	2	..	3	90
1919	76	5	1	..	3	85
1920	76	5	1	..	3	85
1921	74	5	1	..	3	83
1922	74	3	1	..	3	81
1923	74	2	1	..	3	80

LENGTH OF TERMS

During the last twenty years, as shown in Table 9, there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1904 the majority of colleges had sessions of twenty-eight weeks or less.

TABLE 9.—*College Terms*

	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	22.5	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	...	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	...	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	...	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	...	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1916	..	...	..	...	4	4.2	17	17.9	43	45.3	28	29.5	..	...
1917	..	...	..	...	1	1.0	15	15.6	46	47.9	31	32.3	..	...
1918	..	...	..	...	2	2.2	23	25.6	37	41.1	22	24.4	..	...
1919	..	...	..	...	1	1.2	11	12.9	44	51.8	23	27.1	1	1.2
1920	..	...	..	...	1	1.2	10	11.8	38	44.7	29	34.1	..	...
1921	..	...	..	...	..	...	11	13.1	39	46.4	28	33.3	..	...
1922	..	...	..	...	..	...	10	13.1	43	56.6	23	30.3	..	...
1923*	..	...	..	...	..	...	6	7.5	48	60.0	22	25.0	..	...

* Information not furnished by five Class C colleges during the last six years.

Since then the percentage of colleges having sessions of 33 to 34 weeks has increased from 2.5 to 60.0. For eight years no colleges have had sessions shorter than twenty-nine weeks, and for three years the shortest session reported has been thirty-one weeks. Sessions of from thirty-three to thirty-six weeks were reported by 70, or 87.5 per cent., of all colleges.

TUITION AND OTHER FEES

Attention is called in Table 1, on pages 550, 551, to the amount charged by the various medical colleges per annum for tuition, matriculation, and laboratory and graduation fees for each student. In Table 10, the eighty colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education and Hospitals. Eleven colleges charge fees of $125 or less per year; thirty-three between $125 and $225; thirty between $225 and $325, and six charge above $325. Of the eleven colleges charging $125 or less, ten are listed among Class A (acceptable) colleges[2] by the Council on Medical Education, while one is in Class C. The ten Class A colleges having these low fees include the schools of medicine of several state universities for residents of those states. In contrast, four colleges listed by the Council in Class C charge fees of $175 to $225 per year even though the diplomas from these colleges are reported as not recognized by from forty-two to forty-seven state licensing boards.[3] Although forty-seven colleges listed in Class A charge fees higher than $175 per year for each student, the actual expense for teaching that student for the year in these colleges is much more than the fee charged—made possible because of either state aid or private endowment. No medical college can properly teach modern medicine on the income received from fees alone. Although fees have been advanced, at the same time, greater provision has been made for scholarships and loan funds (see page 558) for the benefit of deserving students who are financially poor.

TABLE 10.—*College Fees*

Total Fees	Number of Colleges			
	Class A	Class B	Class C	Total
$ 75 or less	6	..	..	6
75 to 175	4	..	1	5
125 to 175	13	1	1	15
175 to 225	13	1	4	18
225 to 275	18	1	..	19
275 to 325	10	1	..	11
Above 325	6	..	..	6
Totals	70	4	6	80

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois formerly had the largest number of medical colleges (Table 11), but for the last six years the first place has been held by New York, where there are still eight colleges—all in Class A. Illinois, Missouri and Pennsylvania have six colleges each and Massachusetts has five. Of Class C colleges, however, Missouri has three, Massachusetts has two and Illinois one. These Class C colleges exist because the licensing boards in those states do not have or do not exert the power to have their charters revoked.

For the last two years Illinois has had the largest number of students enrolled, where in former years

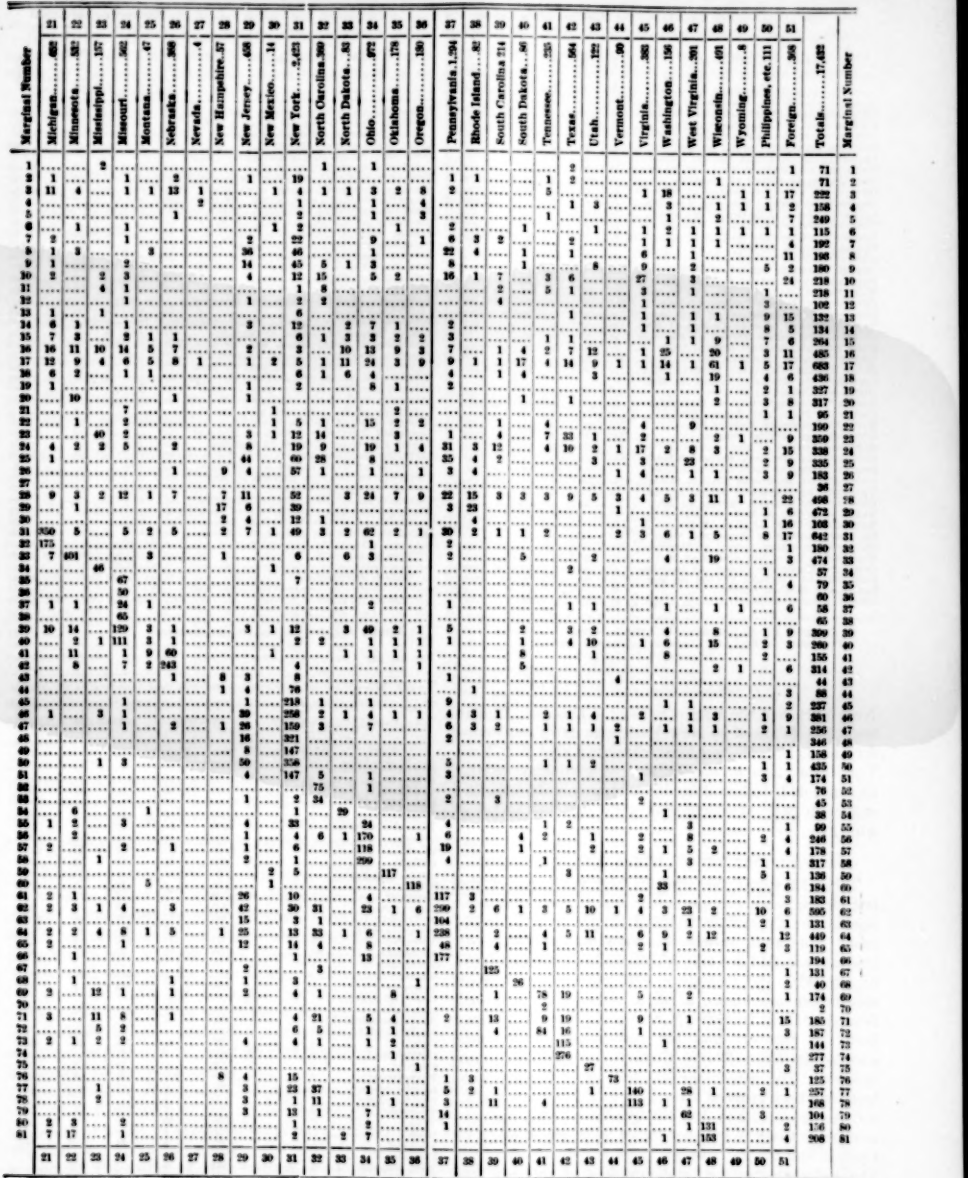
2. See classification in Table 1, pages 550, 551.
3. See J. A. M. A. 80: 1228 (April 28) 1923, Table D.

(Continued on page 556)

Marginal Number	NAME OF COLLEGE	1 Alabama 253	2 Arizona 14	3 Arkansas 106	4 California 642	5 Colorado 160	6 Connecticut 230	7 Delaware 20	8 Dist. Columbia 149	9 Florida 70	10 Georgia 310	11 Idaho 42	12 Illinois 1,317	13 Indiana 685	14 Iowa 511	15 Kansas 314	16 Kentucky 239	17 Louisiana 146	18 Maine 88	19 Maryland 333	20 Massachusetts 367	Marginal Number
1	University of Alabama School of Medicine	64																				1
2	University of Arkansas Medical Department			36	1		1				1		1								1	2
3	College of Medical Evangelists		3		85	8			11	2	1	1	3	1		7			1		3	3
4	Stanford University School of Medicine		1		127				1				1			1		1			1	4
5	University of California Medical School				223	2							2		1	1						5
6	University of Colorado School of Medicine					84						2	3	3	2	1		1			1	6
7	Yale University School of Medicine				2		109		1		1		3						10	3	5	7
8	Georgetown University School of Medicine						16		24		1		2								14	8
9	George Washington University Medical School	1			1	1	3	1	50		2					2	1			10	2	9
10	Howard University School of Medicine	5		1	2		4		36	8	4		2		1	1	9	4		8	1	10
11	Emory University School of Medicine	37								9	142			1			2					11
12	University of Georgia Medical Department									1	86						1					12
13	Chicago Medical School	1											91	1		1	2					13
14	General Medical College						2					2	74	3	2					1		14
15	Loyola University School of Medicine				1	1							178	4	10	4	3	2		1		15
16	Northwestern University Medical School	5	3	3	19	6	1				1	5	182	18	27	14	2	2			1	16
17	Rush Medical College (University of Chicago)	5	1	3	14	11	1		2	2	2	6	191	38	37	15	6		2			17
18	University of Illinois College of Medicine		2	1	6	3				1			334	6	11	2	1					18
19	Indiana University School of Medicine	1			1								2	369	2		1	1				19
20	State University of Iowa College of Medicine												1		280							20
21	University of Kansas School of Medicine					1					1					81						21
22	University of Louisville Medical Department	2			1	1				1	1		3	31	1	2	109		1			22
23	Tulane University of Louisiana School of Medicine	56		21	8	1	5		1	15	5	3	1			2	1	105				23
24	Johns Hopkins University Medical Department	9		3	9	2	7	2	4	3	10	1	7	5	4	3	5	1	2	71	5	24
25	Univ. of Maryland Sch. of Med. and Coll. of. P. & S.						10	1	2	1										93	6	25
26	Boston University School of Medicine				2		6				2				1	1	1		15	1	54	26
27	College of Physicians and Surgeons, Boston *																				26	27
28	Harvard University Medical School	3			25	7	13		1	2	7	1	7	4	4	4	1		20	3	131	28
29	Tufts College Medical School	2					29						1						19		324	29
30	Middlesex College of Medicine and Surgery.—N.						6												1		55	30
31	University of Michigan Medical School			1	8		1		1	1	4	1	12	27	3		3			2	4	31
32	Detroit College of Medicine and Surgery												1									32
33	University of Minnesota Medical School				3								2		5			1		1		33
34	University of Mississippi School of Medicine	1				1					1							4				34
35	University of Missouri School of Medicine														1							35
36	Kansas City College of Medicine and Surgery.—N.*			4											6							36
37	Kansas City University of Physicians and Surg.—N.	1			1	3	1		1						4	6						37
38	St. Louis College of Physicians and Surgeons *																					38
39	St. Louis University School of Medicine	1	3		24	3			1	1		1	52	9	22	12		5		1	2	39
40	Washington University School of Medicine	1		9	15	4			1	1	1	3	29	3	7	14	3	1				40
41	Creighton University School of Medicine				2	3						2	2	1	30	10						41
42	University of Nebraska College of Medicine				5	8	1						1		11	9						42
43	Dartmouth Medical School						5		2				1						3		8	43
44	Albany Medical College						1														2	44
45	University of Buffalo Medical Department						1						1									45
46	Columbia University College of Physicians and Surg.	3	1	1	5	2	13				3			2	1	1	1				7	46
47	Cornell University Medical College	1			7		11			1			2		1	1	1				10	47
48	Long Island College Hospital						4								1					1		48
49	New York Homeo. Med. Coll. and Flower Hosp.—H.				1																1	49
50	University and Bellevue Hospital Medical College				1		7				1				1				1		1	50
51	Syracuse University College of Medicine						2		1							1					3	51
52	University of North Carolina School of Medicine																					52
53	Wake Forest College School of Medicine																	1				53
54	University of North Dakota School of Medicine																					54
55	Eclectic Medical College, Cincinnati.—E.										1		2	6		2	9			1		55
56	University of Cincinnati College of Medicine	2			3									8	1	3	15					56
57	Western Reserve University School of Medicine	1			1					2			1	3		1			2	1		57
58	Ohio State University School of Medicine			1							1			2						1		58
59	University of Oklahoma School of Medicine															2						59
60	University of Oregon Medical School				16	1						3			1							60
61	Hahnemann Med. Coll. and Hosp. of Philadelphia.—H.				2		2	3	1						2	3					2	61
62	Jefferson Medical College of Philadelphia	4			3	1	12	9	3	2	3	2	5	3	2	1			3	7	14	62
63	Temple University School of Medicine								1					1					1		1	63
64	University of Pennsylvania School of Medicine	2			7		3	2		1	4		2	3	6	2	2		3	7	2	64
65	Woman's Medical College of Pennsylvania			1	3		1	2					1	2			1			4	1	65
66	University of Pittsburgh School of Medicine	1															1					66
67	Medical College of the State of South Carolina																					67
68	University of South Dakota College of Medicine														5							68
69	University of Tennessee College of Medicine	13		3	1				1	2	7		5				2	3				69
70	University of West Tennessee Medical Department																					70
71	Meharry Medical College	5		11	1		1			5	18		7	1		1	6	4				71
72	Vanderbilt University School of Medicine	24		6	1					2	4		2			1	16	2				72
73	Baylor University College of Medicine	1			2	2									1			3				73
74	University of Texas School of Medicine																					74
75	University of Utah School of Medicine			1		2						3										75
76	University of Vermont College of Medicine				1		9			1									5		5	76
77	Medical College of Virginia			1			2		1	1							1	1		4		77
78	University of Virginia Department of Medicine	2			1				2	4	2						2	1		3		78
79	West Virginia University School of Medicine											1										79
80	University of Wisconsin Medical School					2							3		6							80
81	Marquette University School of Medicine												7		5		2					81
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

* Figures and distribution approximate.

E.—Eclectic; H.—Homeopathic; N.—Nondescript.



NAME OF COLLEGE	Enrolled During 1922-23					
	1st year	2d year	3d year	4th year	5th year	Totals
University of Alabama School of Med.*...	41	30	...	...	...	71
University of Arkansas Medical Dept.	31	30	10	...	...	71
College of Medical Evangelists.....	53	70	60	39	...	222
Stanford University School of Medicine...	46	42	23	25	22	158
University of California Medical School...	62	53	48	44	42	249
University of Colorado School of Medicine	42	32	17	24	...	115
Yale University School of Medicine.....	59	51	49	33	...	192
Georgetown University School of Medicine	57	67	33	36	...	193
George Washington University Med. Sch. .	75	51	38	10	...	180
Howard University School of Medicine....	53	80	47	29	...	218
Emory University School of Medicine.....	59	48	60	51	...	218
University of Georgia Medical Dept.	30	29	33	10	...	102
Chicago Medical School.....	32	40	21	29	...	122
General Medical College.....	37	39	30	28	...	174
Loyola University School of Medicine....	80	72	55	79	28	314
Northwestern University Medical School...	102	95	111	93	84	485
Rush Medical College (Univ. of Chicago).	105	125	144	178	131	683
University of Illinois College of Med.	100	90	89	80	67	426
Indiana University School of Medicine....	108	90	71	58	...	327
State University of Iowa College of Med.	116	96	58	47	...	317
University of Kansas School of Medicine.	35	18	20	22	...	95
University of Louisville Medical Dept.	67	54	49	29	...	199
Tulane Univ. of Louisiana Sch. of Med..	102	82	89	76	...	349
Johns Hopkins University Medical Dept. .	79	79	86	94	...	338
University of Maryland School of Medicine and College of P. & S.....	108	86	87	54	...	335
Boston University School of Medicine....	60	49	50	24	...	183
College of Phys. and Surgs., Boston †...	8	9	10	9	...	36
Harvard University Medical School.....	125	125	124	124	...	498
Tufts College Medical School.....	140	127	142	63	...	472
Middlesex College of Med. and Surg.—N..	13	34	26	30	...	103
University of Michigan Medical School....	174	201	148	119	...	642
Detroit College of Medicine and Surgery..	58	64	32	26	...	180
University of Minnesota Medical School..	100	108	105	61	100	474
University of Mississippi School of Med.*	33	24	...	...	...	57
University of Missouri School of Med.*...	43	36	...	...	...	79
Kansas City Col. of Med. & Surg.—N.†...	18	9	10	23	...	60
Kansas City Univ. of Phys. & Surgs.—N.	15	9	2	32	...	58
St. Louis College of Phys. and Surgs.†..	10	9	8	38	...	65
St. Louis University School of Medicine..	134	99	92	83	...	399
Washington University School of Med. ...	67	63	75	55	...	260
Creighton University College of Medicine.	42	40	37	35	...	152
University of Nebraska College of Med. ..	91	69	83	70	...	314
Dartmouth Medical School*.....	16	28	...	...	...	44
Albany Medical College.....	34	21	19	14	...	88
University of Buffalo Medical Dept.....	72	50	65	50	...	237
Columbia Univ. College of Phys. & Surgs.	103	98	86	94	...	381
Cornell University Medical College.....	78	55	50	64	...	250
Long Island College Hospital.....	110	92	57	87	...	346
New York Homeopathic Medical College and Flower Hospital.—H.....	70	35	35	18	...	158
University and Bellevue Hosp. Med. Coll.	135	109	106	83	...	433
Syracuse University College of Medicine..	51	50	37	36	...	174
University of No. Carolina Sch. of Med.*	38	38	...	...	...	76
Wake Forest College School of Med.*....	27	18	...	...	...	45
University of No. Dakota Sch. of Med.*..	17	21	...	...	...	38
Eclectic Medical College, Cincinnati.—E..	29	24	30	16	...	99
University of Cincinnati College of Med..	61	57	67	61	...	246
Western Reserve University Sch. of Med.	58	67	43	30	...	178
Ohio State University College of Medicine	116	80	54	49	...	317
University of Oklahoma School of Med.	54	34	24	24	...	136
University of Oregon Medical School.....	62	53	40	29	...	184
Hahnemann Medical College and Hospital of Philadelphia.—H.	52	49	50	32	...	183
Jefferson Medical College of Philadelphia	161	132	150	152	...	595
Temple University School of Medicine....	51	42	12	26	...	131
University of Pennsylvania Sch. of Med.	105	84	134	126	...	449
Woman's Medical College of Pennsylvania	27	30	33	21	...	119
University of Pittsburgh School of Med.	72	47	35	40	...	194
Medical Coll. of the State of So. Carolina	37	40	28	26	...	131
University of So. Dakota Coll. of Med.*	19	21	...	...	...	40
University of Tennessee College of Med..	51	52	49	22	...	174
University of W. Tennessee Med. Dept.	...	...	...	2	...	2
Meharry Medical College.....	45	28	48	64	...	185
Vanderbilt University School of Medicine	52	46	51	38	...	187
Baylor University College of Medicine....	61	42	24	17	...	144
University of Texas School of Medicine*..	92	71	72	42	...	277
University of Utah School of Medicine*..	17	10	...	...	...	27
University of Vermont College of Med...	25	43	35	22	...	125
Medical College of Virginia.....	81	58	75	43	...	257
University of Virginia Dept. of Medicine..	55	55	31	27	...	168
West Virginia University School of Med.*	55	49	...	...	...	104
University of Wisconsin Medical School *	93	63	...	...	...	156
Marquette University School of Medicine	63	55	42	30	18	208
Totals for 1923.....	5162	4815	4361	3322	472	17432
Totals for 1922.....	5412	4219	3355	2949	505	16440
Totals for 1921.....	4825	3588	2637	2116	408	14572

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
* Gives only the first two years of the medical course.

† Figures and distribution are approximate.

(Continued from page 553)

New York had the largest number. This year Illinois has 2,134, followed by New York with 2,075 and Pennsylvania with 1,671 and Massachusetts with 1,292. New York leads also in the number of graduates, having reported 444, followed by Pennsylvania with 386, Illinois with 360, Massachusetts with 242 and Missouri with 216.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 12 shows the students and graduates of the last eleven years grouped according to their classification by the Council on Medical Education and Hospitals. Note that during this time the percentage of students enrolled in Class A colleges has increased from 65.4 to 94.0, and that since 1917 the total number of students in attendance at these schools has increased from 11,317 to 16,454. Note, on the other hand, that both the numbers and the percentages of students enrolled in Class B and Class C colleges have been reduced. The percentage of students in Class B colleges has been reduced from 24.4 to 3.2 and in Class C colleges from 10.2 to 2.8. Of graduates, also, the percentage in Class A colleges shows an increase, while in Class B and Class C colleges there has been a decrease. The reductions in the total numbers of students and graduates, therefore, have been largely at the expense of the lower grade colleges.

TABLE 11.—*Medical Colleges, Students and Graduates by States*

State	Colleges		Students		Graduates		Graduates with B.S. or A.B.
	Class A and B	Class C	Men	Women	Men	Women	
Alabama	1	..	71	...	...	..	...
Arkansas	1	..	71	...	...	..	...
California	3	..	549	89	81	14	78
Colorado	1	..	100	15	22	1	6
Connecticut	1	..	184	8	31	..	25
Dist. of Columbia	3	..	575	16	78	3	40
Georgia	2	..	319	1	61	..	28
Illinois	5	1	2,002	132	337	23	241
Indiana	1	..	313	14	55	3	55
Iowa	1	..	309	8	42	2	24
Kansas	1	..	91	4	18	1	13
Kentucky	1	..	194	5	28	1	8
Louisiana	1	..	345	14	73	4	36
Maryland	2	..	620	53	129	15	116
Massachusetts	3	2	1,220	63	221	11	123
Michigan	2	..	773	49	106	9	53
Minnesota	1	..	444	30	78	7	85
Mississippi	1	..	55	2	...	..	...
Missouri	3	3	883	28	203	13	107
Nebraska	2	..	402	17	89	4	80
New Hampshire	1	..	44	...	...	..	...
New York	8	..	1,911	164	404	40	221
North Carolina	2	..	120	1	...	..	...
North Dakota	1	..	38	...	...	..	...
Ohio	4	..	795	45	154	11	109
Oklahoma	1	..	134	2	24	..	22
Oregon	1	..	140	15	23	3	13
Pennsylvania	6	..	1,505	166	348	38	180
South Carolina	1	..	125	6	24	1	12
South Dakota	1	..	39	1	...	..	...
Tennessee	3	..	542	8	122	3	59
Texas	2	..	356	25	55	4	16
Utah	1	..	36	1	...	..	...
Vermont	1	..	122	3	23	..	9
Virginia	2	..	407	19	68	3	24
West Virginia	1	..	103	1	...	..	...
Wisconsin	2	..	346	10	19	1	19
Totals	74	6	16,402	1,089	2,906	214	1,787

HINTS TO PROSPECTIVE MEDICAL STUDENTS

The student who is contemplating the study of medicine should note with care the character and classification of the medical school in which he is planning to enroll.[4] The selection of the school in which he is to obtain his medical training is a matter of extreme importance and should be considered with special care. He should note the standards for admission, which will be found in the descriptive statements of the colleges appearing on pages 561 to 570. A careful review of the material published this week will be of great service to such students.

GRADUATE MEDICAL EDUCATION

The facilities for graduate medical instruction in the United States are set forth on the next few pages. Not only are the separate graduate medical schools given, but also the opportunities available in undergraduate medical schools. In the latter, the courses vary somewhat from year to year, but the outlines given indicate the variety and extent of such work. It is hoped that by the publication each year of these data opportunities in both graduate and undergraduate schools may be enlarged and a greater use be made of the abundance of clinical material in this country. This is now the greatest need in medical education. The majority of undergraduate medical schools are now on a par with those in other leading countries, but there should be developed increased opportunities where physicians can secure high grade instruction in graduate medical work.

TABLE 12.—*Students and Graduates According to Classification*

	Students						Graduates					
	Colleges Rated in Class						Colleges Rated in Class					
Year	A	%	B	%	C	%	A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,059	26.4	382	9.8
1914	12,826	74.7	2,889	17.2	1,329	8.1	2,926	73.1	695	19.1	282	7.8
1915	11,314	76.0	2,662	17.9	909	6.1	2,629	74.4	688	19.4	219	6.2
1916	11,102	79.6	2,057	14.9	773	5.5	2,630	74.7	695	19.8	193	5.5
1917	11,317	82.3	1,761	12.8	686	5.0	2,577	76.3	648	19.2	154	4.5
1918	11,322	84.5	1,488	10.9	620	4.5	2,094	75.8	399	14.9	247	9.2
1919	11,458	87.9	1,049	8.3	560	3.8	2,230	83.0	283	10.1	169	6.1
1920	12,610	89.6	669	4.8	798	5.6	2,699	88.4	152	5.0	205	6.6
1921	13,687	90.5	832	5.6	553	3.9	2,812	88.1	200	6.3	180	5.6
1922	14,025	90.6	852	5.3	603	4.1	2,204	87.1	143	5.7	182	7.2
1923	16,454	94.0	582	3.2	456	2.8	2,881	91.7	83	2.9	156	5.4

EXISTING AND EXTINCT MEDICAL COLLEGES

On pages 571 to 577 will be found a complete list of medical schools in the United States including those which are now extinct. Some of the institutions have gone under two or more titles during their existence. The tabulation shows the dates during which each institution existed under any particular title and gives references to the lines where any other titles will be found under which the same institution was known. All titles are given in alphabetical order so that reference to any institution can easily be made.

The tabulation shows, also, the particular years when each medical school had (or did not have) graduates; the dates when the school began to require, respectively, one year or two or more years of collegiate work for admission; the rating of each institution in Class A, B or C by the Council on Medical Education and Hospitals, and the years during which that particular classification was held. The last column gives the key number of the institution as given in the American Medical Directory. This list is of special importance to all those who are interested in the standing of medical schools from which physicians graduated.

4. For useful information regarding all medical schools, a pamphlet entitled "Choice of a Medical School" will be sent to any address on receipt of 8 cents.—ED.

The Combined Course in Liberal Arts and Medicine

There are sixty-three medical schools which announce that arrangements have been made whereby students can secure degrees in both arts and medicine in six or seven years' time. Many have arranged for the B.S. and M.D. degrees in six years, or the A.B. and M.D. degrees in seven years. Eleven of these colleges give only the first two years of the medical course and, therefore, offer only the first four or five years of the combined course. These are indicated by the figures four and five in parentheses. The list of medical schools follows:

College	B.S. and M.D.	A.B. and M.D.
University of Alabama School of Medicine	6 (4)	..
University of Arkansas Medical Department	6	..
College of Medical Evangelists	6	7
Stanford University School of Medicine	..	8[1]
University of California Medical School	8[1]	8[1]
University of Colorado School of Medicine	..	7
Yale University School of Medicine	7	..
Georgetown University School of Medicine	6	..
George Washington University Medical School	6	7
Howard University School of Medicine	7	7
Emory University School of Medicine	7	..
University of Georgia Medical Department	6	..
General Medical College	6	..
Loyola University School of Medicine	7[1]	..
Northwestern University Medical School	7[1]	..
Rush Medical College	8[1]	..
University of Illinois College of Medicine	7[1]	8[1]
Indiana University School of Medicine	6	7
State University of Iowa College of Medicine	6	7
University of Kansas School of Medicine	6	7
University of Louisville Medical Department	6	..
Tulane University School of Medicine	6	..
Johns Hopkins University Medical Department	..	7
University of Maryland School of Medicine	..	7
Boston University School of Medicine	6	..
Tufts College Medical School	..	7
University of Michigan Medical School	6	7
University of Minnesota Medical School	7[1]	8[1]
University of Mississippi	6 (4)	..
St. Louis University School of Medicine	6	..
University of Missouri School of Medicine	..	6 (4)
Washington University School of Medicine	6	..
Creighton University College of Medicine	6	..
University of Nebraska College of Medicine	6	7
Dartmouth Medical School	7 (4)	..
Albany Medical College	7	..
Columbia University College of Phys. and Surgs.	..	7
Cornell University Medical College	..	7
Syracuse University College of Medicine	6	7
University and Bellevue Hospital Medical College	6	..
University of Buffalo Medical Department	6	7
University of North Carolina School of Medicine	7 (4)	..
Wake Forest College School of Medicine	6 (4)	..
University of North Dakota School of Medicine	6 (4)	7 (4)
Ohio State University College of Medicine	6	7
University of Cincinnati College of Medicine	6	7
Western Reserve University School of Medicine	7	7
University of Oklahoma School of Medicine	6	..
University of Oregon Medical School	..	7
Hahnemann Medical Coll. and Hosp., Philadelphia	6	..
University of Pennsylvania School of Medicine	..	7
University of Pittsburgh School of Medicine	7	..
University of South Dakota College of Medicine	6 (4)	7 (4)
University of Tennessee College of Medicine	6	7
Baylor University College of Medicine	..	6
University of Texas School of Medicine	6	7
University of Utah School of Medicine	6 (4)	..
University of Vermont College of Medicine	..	7
Medical College of Virginia	..	7
University of Virginia Department of Medicine	6	7
West Virginia University School of Medicine	6 (4)	..
Marquette University School of Medicine	..	8[1]
University of Wisconsin Medical School	6 (4)	7 (4)

1. Eight medical schools require a hospital internship for the M.D., making a total of 7 or 8 years for the combined course.

Scholarships in Medical Schools

As evidence that provision is being made for worthy students, regardless of their financial status, 534 scholarships are reported this year in the following forty-six medical schools:

University of Alabama School of Medicine, Tuscaloosa	67
Stanford University Medical School,* San Francisco	2
University of California Medical School,* San Francisco	6
University of Colorado School of Medicine,* Denver	1
Yale University School of Medicine,* New Haven	2
Georgetown University School of Medicine, Washington	2
Emory University Medical School,* Atlanta	11
Northwestern University School of Medicine,* Chicago	1
Rush Medical College, Chicago	7
University of Illinois College of Medicine, Chicago	84
Indiana University School of Medicine,* Bloomington and Indianapolis	12
State University of Iowa College of Medicine, Iowa City	1
University of Kansas School of Medicine,* Kansas City	1
Johns Hopkins University Medical Department, Baltimore	6
University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	8
Boston University School of Medicine,* Boston	16
Medical School of Harvard University,* Boston	50
Detroit College of Medicine and Surgery, Detroit	8
University of Missouri School of Medicine,* Columbia	10
Washington University School of Medicine, St. Louis	2
University of Nebraska College of Medicine,* Omaha	6
Dartmouth Medical School,* Hanover, N. H.	2
Albany Medical College, Albany, N. Y	11
University of Buffalo Department of Medicine,* Buffalo	1
Columbia University College of Physicians and Surgeons, New York	36
Cornell University Medical College,* New York	3
Syracuse University College of Medicine, Syracuse	1
University and Bellevue Hospital Medical College,* New York	1
University of North Carolina School of Medicine, Chapel Hill	1
University of Cincinnati College of Medicine,* Cincinnati	12
University of Oregon Department of Medicine,* Portland	5
Hahnemann Medical College and Hospital of Philadelphia*	12
Jefferson Medical College, Philadelphia	3
Temple University Department of Medicine, Philadelphia	3
University of Pennsylvania School of Medicine,* Philadelphia	4
University of Pittsburgh School of Medicine, Pittsburgh	3
Woman's Medical College of Pennsylvania,* Philadelphia	30
Medical College of the State of South Carolina, Charleston	8
University of Tennessee College of Medicine, Memphis	15
Vanderbilt University Medical Department, Nashville, Tenn	4
University of Texas Department of Medicine,* Galveston	2
University of Vermont Medical School*	53
Medical College of Virginia, Richmond	10
University of Virginia Department of Medicine,* Charlottesville	2
West Virginia University School of Medicine,* Morgantown	1
University of Wisconsin Medical School, Madison	6
Total in 46 medical schools	534

* Have loan funds also.

Loan Funds

Besides the twenty-four colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

College of Medical Evangelists, Loma Linda, Calif.
Tulane University of Louisiana School of Medicine, New Orleans.
University of Michigan Medical School, Ann Arbor.
Wake Forest College School of Medicine, Wake Forest, N. C.
University of North Dakota School of Medicine, University.

GRADUATE MEDICAL SCHOOLS

Principles Regarding Graduate Medical Schools Formulated by the Council on Medical Education and Hospitals

1. *Admission Requirements.*—The minimum admission requirement for those wishing to prepare themselves for the practice of a specialty should be graduation from an acceptable (Class A) medical college and completion of at least one year's internship in an approved hospital. In the case of reputable physicians who desire to improve themselves for general practice, lenient admission requirements are justified. Courses for *general practitioners* should be open to all physicians who have received the degree of Bachelor or Doctor of Medicine from medical colleges considered acceptable by this Council, or to reputable physicians who were licensed in certain states before graduation was required.

2. *Records.*—Records are just as essential in a graduate as in an undergraduate school. Graduate physicians, indeed, will vary more in their preliminary and professional qualifications than the present-day undergraduates, and a knowledge of these qualifications is essential to decide the character and grade of the work to which the graduate student should be assigned. Again, a knowledge of his proficiency in the work to which he is assigned is essential to know whether he is worthy of advancement, or whether he can be trusted with responsibility for the diagnosis and treatment of patients who may be assigned to his care. Especially are such records important for those preparing for the practice of a specialty.

Records should be kept by each institution, therefore, showing (*a*) the preliminary and professional entrance qualifications of every student, which should be verified by authentic or documentary evidence; (*b*) previous attendance at graduate courses and grades obtained; (*c*) the subjects for which he is enrolled; (*d*) evidence of his faithful attendance at his work; (*e*) evidence of the student's proficiency as demonstrated by his routine or research work, examinations or otherwise, and (*f*) whether an advanced degree or certificate was granted.

3. *Supervision.*—There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals as determined by the present day needs of graduate medical education.

4. *Curriculum and Grading of Instruction Offered.*—The graduate school should have its various courses of instruction so graded that the student, if he desires, can obtain progressive work in a continuous course of *two or three years*, as may be necessary to prepare him satisfactorily for the practice of a chosen specialty. If it is found that at some previous time the student has satisfactorily completed certain portions of the work, he could be given advanced standing and thereby enabled to complete his preparation in a shorter time.

Where short courses are offered in any of the clinical specialties, these also should be *so graded that, in effect, they would be segments of and, in total, the time and educational equivalent of the longer courses.* These segments could be taken at different times, but would ultimately lead the student to the same objective. Excepting certain review courses for general practitioners, all short courses should fit in with a scheme, the ultimate aim of which would be a complete and satisfactory training in the specialty for which the graduate school provides instruction.

Any institution offering work in any specialty should provide (*a*) review courses in anatomy, pathology and the other basic preclinical sciences which apply to the respective specialties; (*b*) clinics in which students can have the opportunity personally to examine patients in hospital wards and outpatient departments and in which various therapeutic and operative procedures can be demonstrated; (*c*) courses of operative and laboratory technic; and (*d*)—to be assigned only when the student's previous training will warrant—assistantships in which, under the supervision of a physician already having recognized skill in the particular specialty, he can gradually assume responsibility in the diagnosis and therapeutic or operative treatment of the sick. Opportunity should be provided also for *research work* in the chosen specialty bearing on both the fundamental sciences and clinical fields. With courses so graded, no student should be admitted to any advanced short course unless, on careful investigation, he is found to possess the knowledge and skill, such as are obtainable in the other prerequisite courses.

5. *Teachers.*—The graduate medical school should be supplied with a corps of teachers well trained in and responsible for the work in all subjects in which opportunities for study are announced. This should include teachers for essential review or advanced work in the preclinical sciences, as well as those who have in charge work in clinical subjects. The teaching staff should be made up of graduates of or teachers in Class A medical colleges or other high grade educational institutions. The faculty should be organized under the various teaching departments in which work is offered, and a competent teacher should be at the head of each department.

6. *Laboratories.*—The school should possess well-equipped laboratories to provide proper review or advanced work in both laboratory and clinical subjects essential for the specialty or specialties in which opportunities are offered. There should also be an adequate supply of special apparatus, such as stereopticons, balopticons, photomicrographic outfits and roentgen-ray equipment.

7. *Library and Museum Facilities.*—The graduate school should have a medical library containing an ample supply of modern text and reference books, files of bound medical periodicals, and the essential indexes. It should also receive

regularly thirty or more standard medical periodicals, the latest numbers of which should be on tables or in racks where they are easily accessible to the graduate students.

The school should be supplied with adequate museum facilities, including anatomic and pathologic specimens.

8. *Hospitals and Dispensaries.*—The graduate medical school should have a teaching hospital with a daily average of 200 or more patients, and an outpatient clinic with an average of 100 or more patients each day; or, if teaching is limited to a single specialty, a hospital of not less than twenty-five patients daily, and an outpatient clinic of at least fifty patients daily. In brief, it should have sufficient clinical material to enable it to provide satisfactory clinical study in the specialty or specialties for which opportunities are offered. In connection with the courses for general practitioners, ample clinical material should be available so that the student may be given the opportunity personally to examine patients in hospital wards and in the outpatient department, and to make the essential laboratory examinations.

9. *Annual Announcements.*—The graduate school should publish annually announcements, bulletins or catalogues giving detailed information in regard to its teachers, laboratories, dispensaries and hospitals; outlines of the various opportunities for study offered in both fundamental and clinical branches; a complete list of the students enrolled during the last preceding year, showing their medical schools and years of graduation and the subjects for which they registered, and a list of those to whom advanced degrees or diploma-like certificates were granted.

10. *Advanced Degrees, Diplomas, Certificates.*—No advanced degree of diploma-like certificate should be granted to any one who is not known to be proficient in the specialty pursued; nor to any one, under any circumstances, who has not completed at least one academic year in full-time study of a single special subject in the institution granting the certificate; and unless scholarship records of the student show that, throughout the period, he has faithfully attended to his work, and unless reasonable tests show that he has diligently and satisfactorily completed the work for which he was registered.

Approved Graduate Medical Schools

On the basis of three complete inspections the following graduate medical schools have been approved.

CALIFORNIA

UNIVERSITY OF CALIFORNIA COURSES FOR GRADUATES, Berkeley—San Francisco.—Opportunities for securing the degree of Ph.D. in various preclinical sciences, anatomy, physiology, chemistry, etc. Address, Dean of the Graduate Division.

ILLINOIS

UNIVERSITY OF CHICAGO, RUSH MEDICAL COLLEGE, Wood and Harrison Streets, Chicago.—Besides courses leading to higher degrees, various courses for general practitioners and special internships in eye, ear, nose and throat are given. The acting dean is Dr. Ernest E. Irons.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets, Chicago.—Courses in the preclinical sciences leading to higher degrees are offered. The dean is Dr. Albert C. Eycleshymer.

LOUISIANA

TULANE UNIVERSITY GRADUATE SCHOOL OF MEDICINE, 1551 Canal St., New Orleans.—Courses in the preclinical branches leading to higher degree are offered. Also general practice courses and courses in eye, ear, nose and throat. The dean is Dr. Charles L. Chassaignac.

MARYLAND

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Baltimore.—General practice courses are offered each year and residencies in the special departments of Johns Hopkins Hospital. The dean is Dr. J. Whitridge Williams.

MASSACHUSETTS

HARVARD MEDICAL SCHOOL COURSES FOR GRADUATES, Boston.—Basic review and general practice courses. Instruction given throughout the year. The dean is Dr. Samuel R. Meaker.

MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY, 233 Charles Street, Boston.—Internships in eye, ear, nose and throat. A general internship and a knowledge of certain basic review courses are required for admission. The superintendent is Dr. Frederic A. Washburn.

MINNESOTA

UNIVERSITY OF MINNESOTA GRADUATE SCHOOL OF MEDICINE, Minneapolis.—Organized 1914. In 1915, the resources and facilities of the Mayo Foundation were added, with the staff, clinics, laboratories, library and records at Rochester, Minn. A nine months' course of advanced work is offered in the science departments giving the fundamental training essential in ophthalmology and otolaryngology, will begin Sept. 25, 1922. It includes anatomy, embryology and histology of the sense organs and of the head region; physiologic optics; physiology of the special senses and of speech; pathology and bacteriology as applied to the eye, ear, nose and throat. The course includes lectures, demonstrations, quizzes and clinical work in the outpatient department. The course is limited to ten students. There are also two teaching fellowships, each available in internal medicine, surgery, obstetrics, ophthalmology and otolaryngology, pediatrics, and mental and nervous diseases. Five others are available in the laboratory sciences, and eighty-six others are available under the Mayo Foundation. Courses in various specialties leading to higher degrees in medicine (M.A., M.S., Ph.D.). Instruction throughout the year. The dean is Guy Stanton Ford, Ph.D., Minneapolis.

NEW YORK

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 W. 59th Street, New York City.—Courses for general practitioners and courses leading to higher degrees are offered. The dean is Dr. William Darrach.

CORNELL UNIVERSITY MEDICAL COLLEGE, 1st Avenue and 28th Street, New York City.—Courses for general practitioners and courses in the preclinical sciences leading to higher degrees are offered. The dean is Dr. Walter L. Niles.

MANHATTAN EYE, EAR, NOSE AND THROAT HOSPITAL SCHOOL OF GRADUATE MEDICAL INSTRUCTION, 201 E. 64th Street, New York City.—Special internships in eye, ear, nose and throat. The superintendent is Mr. Ruben O'Brien.

NEW YORK EYE AND EAR INFIRMARY SCHOOL OF OPHTHALMOLOGY AND OTOLOGY, 13th Street and 2d Avenue., New York City.—Special internships are offered in diseases of the eye and in diseases of the ear. The superintendent is Mr. Thomas K. Robertson.

NEW YORK POST GRADUATE MEDICAL SCHOOL, 2d Avenue and 20th Street, New York City.—Courses for general practitioners and internships in various specialties are offered. The dean is Dr. William D. Cutter.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 E. 26th Street, New York City.—A complete special course in surgery is offered for a limited number of physicians. The dean is Dr. Samuel A. Brown.

PENNSYLVANIA

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF PENNSYLVANIA, Philadelphia. Organized in 1916 by a merger with the University of the Medico-Chirurgical College of Philadelphia. The Philadelphia Polyclinic was merged in 1918. The faculty includes about 230 teachers. Courses extending over from four to twelve months in medicine, pediatrics, neurology, dermatology, syphilology, roentgenology, surgery, gynecology, obstetrics, orthopedics, urology, proctology, ophthalmology, otolaryngology and the medical sciences. Fees: Four month courses, $200; eight months, $400; twelve months, $600. Special schedules (few only), special fees. The dean is Dr. George H. Meeker.

GRADUATE COURSES IN MEDICAL SCHOOLS

Special correspondence with medical schools shows that there are many opportunities for graduate study which physicians have not been able to take advantage of through the lack of knowledge in regard to them. The following list has been prepared to correct this deficiency. More complete information can be obtained by correspondence with the medical school concerned.

CALIFORNIA

STANFORD UNIVERSITY SCHOOL OF MEDICINE, San Francisco.—Graduate courses open to physicians: (a) Mid-day clinics, Wednesdays (medicine), Thursday (surgery) and Saturdays (obstetrics and gynecology), free of charge. (b) Clinical demonstrations at the San Francisco Hospital. On Thursdays beginning at 9 a. m., the work is in surgery; on Fridays, beginning 10 a. m., medicine and the medical specialties. These courses are free of charge. (c) During the summer months, from July 1 to October 1, while there is no routine teaching of undergraduate students, properly qualified graduates in medicine and medical students of this and other approved medical schools may participate in the medical and surgical work, including specialties, in the clinics, hospital and laboratories in the capacity of special workers. The work is purely practical, not didactic, and the number who can participate restricted. (d) Assistantships in clinics and laboratories. A physician may be assigned to some research problem or receive regular instruction from a member of the staff. For the latter an appropriate fee is charged and a nominal fee also for material used. During the last five years an average of 30 physicians each year has occupied these assistantships.

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL.—Resident positions are open to properly qualified medical graduates as follows: In the University Hospital: A resident position in general medicine and four assistant residentships, one each in general medicine and dermatology; in neuropsychiatry and infirmary; in outpatient department; in medical research. Besides a residentship in surgery, there are five assistant residentships, one each in general surgery, urology, orthopedic surgery, ophthalmology, otorhindaryngology, outpatient department and surgical pathology. There are a residentship and two assistant residentships each in pediatrics and in obstetrics and gynecology. There is one residentship each in pathology and in biochemistry and clinical laboratories. In the San Francisco Hospital there are two positions as house officers in medicine and tuberculosis; two in surgery; one in pediatrics and isolation and one in obstetrics and gynecology. Special courses to physicians and advanced students are open in the departments of anatomy (at Berkeley) neurosurgery, pathology and research medicine.

COLORADO

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, Boulder-Denver.—During the present summer, courses for physicians were given in bacteriology, biochemistry, blood chemistry, anatomy, histology, embryology, clinical laboratory technic, advanced pathology and ophthalmology. The session extended from June 18 to August 31, divided into two terms. Physicians may register for either term or for the entire quarter.

ILLINOIS

RUSH MEDICAL COLLEGE, Chicago.—The following courses are offered for physicians: (a) A course on tuberculosis. (b) Special course for three or four physicians who are willing to spend a full year in diseases of the ear, nose and throat. (c) Attendance at arena clinics for which a visitor's ticket for a week is issued—registration not limited. (d) Opportunities for a few physicians for investigative work in the sciences fundamental to medicine, including pathology. Fees: $25 for each major's work, or $75 for a full quarter.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Chicago.—The summer quarter is devoted to graduate work and courses for physicians, and during the remainder of the year a large number of fellowships are available in courses leading to the degrees of Master of Science and Doctor of Philosophy. Special opportunities for individual research work in anatomy, biochemistry, pharmacology, and pathology and bacteriology were offered during the present summer quarter.

INDIANA

INDIANA UNIVERSITY SCHOOL OF MEDICINE, Indianapolis.—At any time during the year special arrangements will be made for the physicians of Indiana who make application to receive instruction with the medical students or alone. During the summer a well arranged course is offered in medicine, surgery, pathology (including immunology and bacteriology) and biochemistry.

IOWA

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, Iowa City.—Opportunities open for a limited number of those who desire to specialize, or to take work leading to a graduate degree. Courses are arranged on consulting head of the department in which work is to be taken. There are opportunities for physicians to act as clinical assistants, research workers, hospital chemists, etc.

MARYLAND

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Baltimore.—During the present summer a six weeks' course in medical diagnosis was offered, limited to thirty physicians. The course consisted of ward rounds, lectures, clinics, medical and physical diagnosis, laboratory work in clinical and gross pathology, microscopy, and group clinics in the special study of dermatology and syphilis. Opportunities for advanced work open to a certain number of qualified men. The work is arranged for after personal communication between the applicant and the heads of the departments concerned.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE, Baltimore.—Courses are open for physicians in anatomy, pathology, bacteriology, clinical laboratory, operative surgery, obstetrics, genito-urinary diseases, roentgenology and pediatrics. Arrangements made by personal communication.

MICHIGAN

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL, Ann Arbor.—The regular laboratory and clinical courses in the school are open to qualified physicians. In addition special work is arranged along all clinical and laboratory branches to meet the special needs of the applicant. Such courses may lead to the degrees of Master of Science or Doctor of Philosophy.

MISSOURI

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, St. Louis.—Washington University School of Medicine has established a series of postgraduate medical courses in all the various clinical branches. These courses make use of the laboratory, clinical and library facilities of the school and its allied hospitals. The courses are planned so as to run approximately four weeks once a year and to consist of subjects so grouped as to furnish the student a comprehensive training in the works he selects. This is accomplished by combining with the major subjects numerous fundamentally related subjects of lesser, though vital, importance. In addition to these combined courses, detached courses are offered, thus affording students a wide range of selection. The plan of instruction furthermore provides for one and two year courses in some of the specialties so as to furnish opportunities to men desiring to qualify as specialists. A descriptive pamphlet is available for all applicants who request it by addressing the Dean.

NEBRASKA

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Omaha.—A special two weeks' course for practitioners is offered each June. Subjects stressed are physical diagnosis; general medical and surgical diagnosis; pediatrics, including infant feeding; syphilis and skin. Ward walks in the University Hospital are conducted twice daily. Evening illustrated lectures cover topics of general medical and surgical interest. The wards of the University Hospital and the outpatient department are utilized for clinical material.

NEW YORK

LONG ISLAND COLLEGE HOSPITAL, Brooklyn.—Courses open in anatomy, embryology, neuro-anatomy, histology, bacteriology, biochemistry, physiology, preventive medicine and hygiene. Also opportunities for research work in anatomy, biochemistry and physiology. Postgraduate courses in anatomy, physiology, genito-urinary, surgery, medicine, bacteriology, biochemistry, obstetrics and gynecology, otolaryngology, pediatrics and pathology are offered annually for six weeks from May 15. Arrangements made by personal communication.

OHIO

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, Cleveland.—Special review courses for physicians in medicine and surgery, including some of the specialties, during May and June of each year. Courses limited to 20 men. An effort is made to occupy the physician's entire time from 8 a. m. to 5 p. m. During the remainder of the year arrangements may be made with individual instructors for advanced research work in clinical and laboratory subjects. For information address the registrar.

PENNSYLVANIA

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE.—A general course of instruction by lectures, clinics and demonstrations. Summer course, two weeks, beginning June 4. Special course in industrial medicine and surgery for three days, beginning May 31. This is open to those who register for the regular course. Fee, $50. Write to Edith S. Glenn, Secretary.

VIRGINIA

MEDICAL COLLEGE OF VIRGINIA, Richmond.—Opportunities open for a few physicians to take courses in the combined laboratories of the college of the state board of health and of the Richmond City Board of Health.

ONTARIO

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Graduate courses in clinical and laboratory work are available to physicians on application. They may register and attend by the month any of the undergraduate clinical courses of the final year. For information address the dean.

GRADUATE COURSES IN PUBLIC HEALTH

Graduate courses in public health have been established in connection with twelve medical schools, the first of which was at the University of Pennsylvania in 1909; the latest is that in connection with the medical department of Howard University, which began its course in 1922. Yale University established its course in public health in 1917. Two institutions, the University of Colorado and Tulane University, suspended their course in 1918. Seven of the schools have courses leading to the degree of Doctor of Public Health (Dr.P.H.) after a two year course and one (the Detroit College of Medicine and Surgery) offers it after a one year course. The University of California offers instead the degree of Graduate in Public Health (Gr.P.H.) after a two year course. After a one year course the degree of Certified Sanitarian (C.S.) is offered by the University of Pennsylvania and Howard University to graduates of colleges of arts and sciences. Six of the schools grant a certificate in public health (C.P.H.) after a one year course. The degree of Master of Public Health (M.P.H.) is offered after a one year course by the University of Wisconsin Medical School and Ohio State University College of Medicine. The Master in Arts in Public Health [M.A. (P.H.)] is offered by the University of California Medical School and Harvard School of Public Health, and the Master in Science in Public Health [M.S. (P.H.)] by the University of Michigan, Ohio State University College of Medicine and by Howard University. The courses offered by the twelve schools of public health are as follows:

THE UNIVERSITY OF CALIFORNIA: Courses began in 1915; three courses leading to degree of Gr.P.H.: (a) a four year course covering four years in the college of letters and science and two years in the graduate division; (b) a two year course in the graduate division for graduates of the College of Civil Engineering who have completed the work in sanitary engineering, and (c) a course of one and a half years in the graduate division for students who have completed three and a half years of the medical course. Completion of this third course gives the degrees of M.D. and Gr.P.H. The University of California also offers a one year course to persons holding a bachelor's degree based on a major in public health for the degree of Master in Arts in Public Health [M.A. (P.H.)]. A thesis is required for the degree.

YALE UNIVERSITY GRADUATE COURSE IN PUBLIC HEALTH: The graduate course in public health at Yale University School of Medicine was first established in 1917, and during 1922-1923 there were thirteen instructors. A one year course leads to the certificate in public health (C.P.H), a three year course leads to the degree of Doctor of Philosophy (Ph.D.), and to medical graduates only, a two year course leads to the degree of Doctor of Public Health (Dr.P.H.). These are required in all cases. The fees are $200 per year. The course extends from October to June. During 1922-1923, 21 students were enrolled, and in June, 1923, 3 certificates and 7 degrees were granted.

JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH was opened in October, 1918. There are 17 professors and 32 lecturers, associates and instructors, a total of 49. Four courses are offered: (a) A two year course leading to the degree of Dr.P.H., requiring for admission a bachelor's degree and a degree in medicine,

The degree of M.D. and the degree of Dr. P.H. may be obtained in a combined course of five years. A thesis is required for graduation. (b) A three year course leading to the degree of Doctor of Science in Hygiene requiring for admission a bachelor's degree and adequate training in physics, chemistry, biology and the medical sciences, anatomy, physiology and pathology. A written and oral examination and a dissertation embodying the results of an independent investigation are required for graduation. (c) A two year course leading to the degree of Bachelor of Science in Hygiene, the course consisting of combined work in the medical school and the School of Hygiene and Public Health. For admission the applicant must have completed at least two years of work in an approved college and have studied courses in physics, biology, inorganic and organic chemistry. (d) A one year course leading to a certificate in public health is also offered to graduates of approved medical schools or graduates in arts or sciences who present evidence of satisfactory training in the physical and medical sciences. Intensive courses lasting six weeks or more for public health officers may be arranged during the second trimester. The fees charged are $250 per year. Courses for special students are $50 per trimester. Altogether 178 students were enrolled during 1922-1923, including 12 who were candidates for degrees and 15 for the certificate in public health. The course extends from October 2 to May 31.

HOWARD UNIVERSITY SCHOOL OF PUBLIC HEALTH AND HYGIENE will open at the beginning of the fall term, 1923. Five courses offered: (a) one year course to graduates in medicine leading to degrees of Certified Sanitarian (C.S.) or Bachelor of Science (B.S.) in Public Health. (b) Two years course to graduates in medicine leading to degree of Doctor of Public Health (Dr.P.H.). (c) Fifth year in medicine to Howard University medical students immediately following their graduation leading to the degree of Doctor of Public Health (Dr.P.H.). For graduates of recognized colleges and universities a one year course leading to the certificate in public health (C.P.H.) and a two year course leading to the degree of Master of Science (M.S.) is offered. For information write to Dr. Algernon B. Jackson, Director.

THE HARVARD SCHOOL OF PUBLIC HEALTH: This school first gave instruction to students in September, 1922. There are 44 officers of instruction. Courses are offered leading to the degrees of Bachelor of Public Health, Master of Public Health, Doctor of Public Health, and Doctor of Philosophy in Hygiene. Admission requirements for students entering as candidates for degrees are essentially those required for entrance to the Harvard Medical School, plus the first two years work in medicine. Properly qualified students will be admitted for one or more courses which may be taken in a concentrated period of time. During the past year 28 students attended the school, who specialized in the various fields of public health, including industrial hygiene, child hygiene, sanitary engineering, public health administration, vital statistics, mental hygiene, tropical medicine, epidemiology, immunology, and bacteriology. The academic year lasts from September 24, 1923, to June 19, 1924. The tuition fee is $300. A limited number of fellowships are offered to duly qualified students. For catalogues and further information apply to the Secretary, 55 Van Dyke Street, Boston, Mass.

DETROIT COLLEGE OF MEDICINE AND SURGERY: The course was first offered in 1913 with ten instructors. A two year course leading to the degree of Doctor of Public Health (Dr.P.H.) is offered to graduates of approved medical schools. The work is conducted at the college, the Detroit City Board of Health, and the Municipal Contagious Hospital. It includes diagnosis of contagious diseases, sanitary engineering, laboratory, and public health field work. Fees are $200 per year. A thesis is required of each candidate before he can receive the degree. One student enrolled during the past session. Dr. I. Wernens, Registrar. The course extends from Oct. 1, 1923, to June 21, 1924.

THE UNIVERSITY OF MICHIGAN GRADUATE SCHOOL: The graduate courses in public health were established in the University of Michigan in 1913. The number of instructors is approximately 12. Two courses are offered—one to graduates in arts and sciences or medicine extending from one to two years, leading to the degree of Master of Science in Public Health; the other a course of from two to three years in length for graduates in arts or sciences and medicine, leading to the degree of Doctor of Public Health (Dr.P.H.). For residents of Michigan the fees consist of $10 matriculation and $85 for men students and $80 for women; for nonresidents of Michigan, matriculation $25 and annual fee of $110 for men and $105 for women. A thesis is required for the degree of Dr.P.H. There is a summer session, but the regular session extends from September 25 to June 16. In 1922-1923, 3 students were enrolled. Dr. Alfred H. Lloyd, Dean.

ALBANY MEDICAL COLLEGE: Postgraduate courses in infectious diseases and public health were begun in 1919. Of the class of 1923, 11 physicians received the certificates, having completed the course. The total number of certificates issued since 1919 for the course is 139. Dr. Charles C. Duryee, Director of Course.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE: The graduate course in public health began in 1916. Two courses are offered—a two year course leading to the degree of Doctor of Public Health for graduates of approved medical schools, and a course leading to a certificate of attendance. This consists of a correspondence course requiring a study of about 3,000 pages on public health subjects, especially adapted for health officers, together with a week of residence. The tuition for Dr.P.H. course is $200 for the first year and $25 for the second. The fee for the correspondence course is $30, including the matriculation fee. For the correspondence course the last week must be spent in residence. The courses begin in October. There were 16 health officers who took the correspondence course last year. Four are taking the Dr.P.H. course.

OHIO STATE UNIVERSITY: The curriculum in public health is in the Graduate School and began in 1915 with 7 instructors; 3 students registered the first year of whom 1 graduated in 1916. Since that year there have been from 1 to 2 graduates annually except during the two years of the war. There are now 4 instructors especially concerned with the curriculum and composing the personnel of the Department of Public Health in the College of Medicine in addition to the regular teaching personnel in related subjects in the Graduate School of the university. Important assistance and facilities are also offered by the State Department of Health and other state and local health agencies. Three courses are offered: (a) A one year course leading to the degree of "Master of Science in Public Health," requiring for admission a medical degree from a class A school or a Bachelor's Degree with previous specified training in physics, chemistry and the biologic sciences. A written and oral examination and a thesis, embodying the results of an individual investigation, are required for graduation. (b) Students in the Graduate School may also major in various subjects in public health for which they will be given the degree of "Master of Science" (only), on satisfactory completion of the work required, including a thesis. (c) In addition, the College of Medicine now offers a one year course leading to a "Certificate in Industrial Medicine." This course requires for admission the M.D. degree. Here half-time instruction is combined with time opportunity for practical industrial experience while pursuing the course. No thesis is required. Fees charged for residents of Ohio are $15 for each quarter, three quarters constituting one year's work. While not a requirement, the student is advised to begin any one of the three courses with the autumn quarter. In 1921-1922 there were 7 students enrolled. For information write to Dr. E. R. Hayhurst, Head of the Department of Public Health, O. S. U., Columbus.

THE UNIVERSITY OF PENNSYLVANIA: The graduate courses in public hygiene began in 1906; there are 19 instructors; two courses are offered,—a two year course for graduates in medicine leading to the degree of Dr.P.H., and a one year course for graduates of arts or science leading to the degree of Certified Sanitarian. A thesis is required for graduation. The fees are $250 per year. There was one student registered in 1922-1923. The course extends from October to June.

THE UNIVERSITY OF WISCONSIN: Graduate courses in public health began in 1910. There are eight teachers. Two courses are offered—a one year course for graduates in medicine, leading to the degree of Master of Public Health (M.P.H.); the other a two year course for physicians, leading to the degree of Doctor of Public Health. Fees are $50 per year for residents of Wisconsin and $170 for nonresidents. A thesis is required for graduation. Address inquiries to Mr. K. McRae, Secretary, Medical School.

UNIVERSITY OF WESTERN ONTARIO, London: A course in public health for graduate physicians extending over 8 months of lectures, clinics and laboratory work and 2 months of field work leads to the diploma of public health (D.P.H.). The fee for the course, including the diploma, is $140. A course of length for graduate nurses leads to the certificate of public health nurse (C.P.H.N.). The fee is $50. During 1922-1923, 4 physicians were granted the D.P.H. and 10 nurses were granted the C.P.H.N. The dean of the faculty of public health is Dr. H. W. Hill.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1922. Extract of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's report for 1920. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Ten states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island and Washington, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Alabama, population 2,348,174, has one medical college, the School of Medicine of the University of Alabama, located in Tuscaloosa, a city with a population of 11,996.

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of

Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. The course of study covers two years of thirty-four weeks each. The Dean is Dr. Clyde Brooks. Total registration for 1922-1923 was 71. The fifty-eighth session begins Sept. 12, 1923, and ends May 27, 1924.

ARKANSAS

Arkansas, population 1,752,204, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 65,142.

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work, including college courses in physics, chemistry, biology and a modern language, before beginning the study of medicine.

Little Rock

University of Arkansas Medical Department, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was temporarily suspended in 1918. The faculty consists of 20 professors and 22 lecturers and assistants, total 42. The curriculum embraces four years of thirty-four weeks each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees are $50 each year for resident, and $100 for nonresident students. The Dean is Dr. Morgan Smith. Total registration 1922-1923 was 71. The forty-fifth session begins Sept. 19, 1923, and ends June 6, 1924.

CALIFORNIA

California, population 3,426,861, has three medical colleges. Two are located in San Francisco, a city of 500,676 inhabitants. They are Stanford University School of Medicine and the College of Medicine of the University of California. The College of Medical Evangelists is located at Loma Linda and Los Angeles, the latter city having a population of 576,673.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine.

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Three years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 57 professors and 173 associates and assistants, a total of 230. The course covers five years of eight months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California or $290, $248, $235 and $225; nonresidents are charged $300 additional each year. Total registration for 1922-1923 was 249, graduates 38. The fifty-first session begins Aug. 17, 1923, and ends May 14, 1924.

Loma Linda-Los Angeles

College of Medical Evangelists.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles on property bounded by Boyle, Michigan, Bailey and New Jersey streets. The faculty is composed of 51 professors and 83 associates, assistants and instructors, a total of 134. The course extends over five years of nine months each —the fifth year consisting of an internship or of special work in a department of the Medical School. The work of the first two years is given at Loma Linda and of the last two at Los Angeles. Two years of college work are required for admission. The total fees for the four years, respectively, are $236, $231, $221 and $226. The President is Dr. Newton Evans, Loma Linda, Calif., and the Dean of the Clinical Division is Dr. P. T. Magan, Los Angeles. The total registration for 1922-1923 was 222; graduates 35. The fifteenth session begins Sept. 5, 1923, and ends June 3, 1924.

San Francisco-Stanford University

Stanford University School of Medicine, Campus, Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. The faculty consists of 91 professors and 48 lecturers, assistants, etc., a total of 139. Three years of collegiate work are required for admission. The school has the quarter system and the completion of any three quarters constitutes a college year. The course covers five years of nine months each, including a year of practical or intern work. The total fees for each of the first four years are $261. The Dean is Dr. W. Ophüls, San Francisco. The total registration for 1922-1923 was 158; graduates 22. The fourteenth session begins Oct. 2, 1923, and ends June 18, 1924.

COLORADO

Colorado, with a population of 939,629, has one medical college, the University of Colorado School of Medicine. It is located in Denver, which has a population of 256,491.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or nongraduate, to try the board's written examination.

Boulder-Denver

University of Colorado School of Medicine.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. The faculty embraces 32 professors and 24 lecturers, instructors and assistants, a total of 56. The work embraces a graded course of four years of nine months each. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years are, respectively, $144, $144, $130 and $135. Nonresidents pay $30 more each year. The Dean is Dr. Charles N. Meader. The total registration for 1922-1923 was 115; graduates, 23. The forty-second session begins Sept. 24, 1923, and ends June 9, 1924.

CONNECTICUT

Connecticut, with a population of 1,380,631, has one medical college, Yale University School of Medicine, located in New Haven, population 162,537.

Students who desire to practice medicine in Connecticut will not be eligible unless, prior to entering the study of medicine, they complete, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

Yale University School of Medicine, 150 York Street and at corner Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 26 professors and 97 lecturers and assistants, a total of 123. The requirements for admission are three years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $305, $300, $300 and $320. The Dean is Dr. Milton C. Winternitz. The total registration for 1922-1923 was 192; graduates, 31. The one hundred and eleventh session begins Sept. 27, 1923, and ends June 11, 1924.

DISTRICT OF COLUMBIA

The District of Columbia, population 437,571, has three medical colleges: George Washington University Medical School, Georgetown University School of Medicine and Howard University School of Medicine.

Washington

George Washington University Medical School, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 50 professors and 66 instructors, demonstrators and assistants, a total of 116. Two years of collegiate work are required for admission. The course covers four years of thirty-four weeks each. The fees for the four years, respectively, are $241, $238, $238 and $228. The Dean is Dr. William C. Borden. The total registration for 1922-1923 was 180; graduates, 20. The one hundredth session begins Sept. 26, 1923, and ends June 4, 1924.

Georgetown University School of Medicine, 920 H Street, N.W.—Organized in 1851. The first class graduated in 1852. The faculty contains 59 professors, 39 instructors and assistants; total, 98. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one half months each. The fees for

each of the four sessions, respectively, are $215, $200, $200 and $210. The Dean is Dr. George M. Kober. The registration for 1922-1923 was 193; graduates, 34. The seventy-third session begins Sept. 27, 1923, and ends June 11, 1924.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 22 professors and 27 lecturers and assistants, 49 in all. The admission requirements are two years of collegiate work, including physics, chemistry, botany and zoology, English and two years of French or German. The course covers four years of thirty-three weeks each. The fees of each of the four sessions, respectively, are $168, $158, $158 and $165. The Dean is Dr. Edward A. Balloch. Registration for 1922-1923 was 218; graduates, 27. The fifty-sixth session begins Oct. 1, 1923, and ends June 6, 1924.

GEORGIA

Georgia, population 2,895,832, has two medical colleges, University of Georgia Medical Department, located in Augusta, population 52,548, and the Emory University School of Medicine in Atlanta, a city of 200,616.

In order to secure a license to practice medicine in Georgia, students must complete two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine.

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 98 N. Butler Street.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for admission. The faculty has 17 professors and 96 associates and assistants, a total of 113. The course of study is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $238, $238, $225 and $250. The Dean is Dr. W. S. Elkin. Total registration for 1922-1923 was 218; graduates, 51. The next session begins Oct. 26, 1923, and ends June 3, 1924.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 13 professors and 37 assistants, 50 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. Fees are $5 for matriculation and $60 each year for residents of Georgia and $150 each year for nonresidents. The Dean is Dr. Harry Goodrich. The total registration for 1922-1923 was 102; graduates, 10. The ninety-second session begins Sept. 19, 1923, and ends June 2 ,1924.

ILLINOIS

Illinois, population 6,485,280, has six medical colleges, one of which gives instruction at night, all located in Chicago, a city of 2,701,705 inhabitants. They are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine, General Medical College and the Chicago Medical School.

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE.—Founded in 1837; organized in 1843; was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 117 professors, 177 associates, instructors, etc., a total of 294. The requirements for admission are three years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 130 students in each of the clinical years. No application for admission is accepted after September 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees for each of the four years, respectively, are $250, $240, $240 and $260. The Acting Dean is Dr. Ernest E. Irons. Total registration for 1922-1923 was 473; graduates, 138. The eightieth session begins Oct. 1, 1923, and ends June 14, 1923.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2421 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 63 professors and 102 lecturers and assistants, a total of 165. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are $220, $220, $216 and $210. The Dean is Dr. Arthur I. Kendall. The total registration for 1922-1923 was 485; graduates, 84. The sixty-fourth session begins Oct. 2, 1923, and ends June 14, 1923.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-three weeks each, and a year's internship in an approved hospital. The faculty is composed of 68 professors, 133 assistants and instructors, a total of 201. The matriculation fee is $20 and the tuition fees are $165 each year for resident students and $15 more for nonresidents. The Dean is Dr. Albert C. Eycleshymer. The total registration for 1922-1923 was 436; graduates, 47. The forty-second session begins Oct. 1, 1923, and ends June 7, 1924.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Two years of college work are required for admission. The faculty is composed of 82 professors, 38 assistants and instructors, a total of 120. The total fees for the four years are, respectively, $275, $275, $250 and $275. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1922-1923 was 264; graduates, 28. The next session begins Oct. 1, 1923, and ends June 14, 1924.

MEDICAL COLLEGE OF THE GENERAL MEDICAL FOUNDATION OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859, as Hahnemann Medical College, homeopathic. Reorganized under present name in 1922 (non-sectarian). The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 51 professors and 60 instructors, assistants, etc., a total of 111. Two years of college work are required for admission. The course extends over four years of 35 weeks each, together with a year's hospital internship of 12 months. The tuition is $250 for each of the first four years. The Dean is John Charles Blake, Ph.D. The total registration for 1922-1923 was 134; graduates, 24. The sixty-fourth session begins Oct. 1, 1923, and ends June 10, 1924.

CHICAGO MEDICAL SCHOOL, an afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911 as the Chicago Hospital College of Medicine; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Total registration for 1922-1923 was 132; graduates, 28. *Official reports state that the diplomas from this college are not recognized by the licensing boards of forty-six states.*

INDIANA

Indiana, population 2,930,390, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 314,194 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. The faculty consists of 65 professors and 100 lecturers, associates and assistants, a total of 165. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are $125, $125, $150 and $150. Matriculation fee, $5; microscope fee, $5 to $7.50 per semester. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Assistant Dean at Bloomington is Dr. B. D. Myers; the Dean at Dr. Charles P. Emerson, Indianapolis. The

total registration for 1922-1923 was 327; graduates, 58. The next session begins Sept. 17, 1923, and ends June 11, 1924.

IOWA

Iowa, population 2,404,021, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 11,267.

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language. Hereafter, also, they must have completed a year's internship in an approved hospital.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1910. The faculty is made up of 34 professors, 43 lecturers, demonstrators and assistants, a total of 79. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee for residents of Iowa for the four years, respectively, are, $175, $150, $150 and $160, plus a matriculation fee of $10 and a graduation fee of $10. Nonresidents pay an additional 200 each year. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1922-1923 was 317; graduates, 44. The fifty-fourth session begins Sept. 24, 1923, and ends June 3, 1924.

KANSAS

Kansas, population 1,769,257, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,456, and the last two years in Rosedale, a suburb of Kansas City, which with Kansas City, Mo., have a combined population of 433,261.

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 62. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $131, $131, $133 and $133. For nonresidents the fees of the first two years are $141 each year. The Associate Dean is Dr. M. D. Sudler. The total registration for 1922-1923 was 95; graduates, 19. The forty-fourth session begins Sept. 17, 1923, and ends June 5, 1924.

KENTUCKY

Kentucky, population 2,416,630, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 234,891 inhabitants.

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In the fall of 1922 it became more closely correlated in the University of Louisville and changed its name to the University of Louisville School of Medicine. About the same time it assumed complete control of the professional side of the Louisville City Hospital on a twelve months' basis, under an agreement with the City Administration, the Dean becoming Chairman of the Hospital Staff Executive Committee and the Professor of Medicine the Hospital Staff Executive, with the Hospital Superintendent as business manager and secretary. Two years of college work required for admission. It has a faculty of twenty-five professors, eighteen associate and assistant professors, three lecturers, forty instructors and twenty-three assistants. Students limited after 1922 to 75 Freshmen, 65 Sophomores, 60 Juniors and 60 Seniors. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively, $260, $260, $270 and $290. The Dean is Dr. Stuart Graves. Total registration for 1922-1923 was 199. Next session begins Sept. 3, 1923, and ends June 5, 1924.

LOUISIANA

Louisiana, having a population of 1,798,509, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 387,219.

Students who desire to practice medicine in Louisiana must complete, at an approved college or university, two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 35 professors and 107 assistant professors, instructors, demonstrators, etc., a total of 142. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $225, $225, $215 and $245. The Dean is Dr. Charles C. Bass. The total registration for 1922-1923 was 359; graduates, 77. The eighty-ninth session begins Sept. 27, 1923, and ends June 11, 1924.

MARYLAND

Maryland, with a population of 1,449,661, contains two medical colleges, located in Baltimore, a city with 733,826 inhabitants. They are as follows: Johns Hopkins University Medical Department, and the University of Maryland School of Medicine and College of Physicians and Surgeons.

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 55 professors and 164 clinical professors, etc., a total of 219. The requirements for admission demand that the applicant either has (*a*) completed the chemical-biologic course which leads to the A.B. degree in the university, or (*b*) graduated at an approved college or scientific school and has a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a three years' course in chemistry. The course extends over four years of eight and one half months each. The total fees for each of the four years are, respectively, $318, $317, $317 and $317. The Dean is Dr. J. Whitridge Williams. Total registration for 1922-1923 was 338; graduates, 93. The thirty-first session begins Oct. 1, 1923, and ends June 10, 1924.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The faculty consists of 87 professors and 103 instructors and assistants, a total of 190. Two years of college work are required for admission. The course covers four years of eight months each. The total fees are $265 each year for residents of the state; $315 each year for nonresidents. The Dean is Dr. J. M. H. Rowland. Total registration for 1922-1923 was 335; graduates, 51. The one hundred and seventeenth session begins Oct. 1, 1923, and ends June 7, 1924.

MASSACHUSETTS

Massachusetts, population 3,852,356, has five medical colleges: Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 748,060, except the last named, which is in Cambridge, a city of 109,694.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 84 professors and 191 instructors and assistants, a total of 275. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $300 plus $5 the first year for matriculation. The Dean is Dr. David L.

Edsall. The total registration for 1922-1923 was 498; graduates, 103. The one hundred and forty-first session begins Sept. 24, 1923, and ends June 19, 1924.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Two years of collegiate work are required for admission. The faculty includes 22 professors, 74 associates, etc., making a total of 96. The course covers four years of thirty-five weeks each. Total fees for each of the four years, respectively, are $281, $281, $256 and $266. The Dean is Dr. Alexander S. Begg. Total registration for 1922-1923 was 183; graduates, 24. The fifty-first session begins Sept. 27, 1923, and ends June 16, 1924.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 48 professors and 97 assistants, lecturers, etc., a total of 145. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $260, $245, $235 and $240. The Dean is Dr. Stephen Rushmore. Total registration for 1922-1923 was 472; graduates, 64. The twenty-eighth session begins Sept. 24, 1923, and ends May 29, 1924.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students, 1922-1923, was about 36. There were 9 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty-five states.*

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in that and other osteopathic colleges. The Dean is Dr. Roger S. York. During 1922-1923 the total enrolment was 103; graduates, 19. The next session begins Sept. 17, 1923, and ends June 14, 1924. *This college has been reported as not recognized by the licensing boards of forty-six states.*

MICHIGAN

Michigan, population 3,668,412, has two medical colleges; the University of Michigan Medical School, located at Ann Arbor, a city of 19,516 people, and the Detroit College of Medicine and Surgery, located at Detroit, a city of 993,678 inhabitants.

Students who desire to practice medicine in Michigan, in addition to an accredited four-year high school education, must complete two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Candidates must also have completed an internship in a hospital.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of 40 professors and 98 associates, instructors, etc., a total of 138. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students are for men, $180 per year, and for women $175 per year; for nonresidents, men $260 and women $255 per year. The matriculation fee for residents is $10; for nonresidents, $25. The Dean is Dr. Hugh Cabot. The total registration for 1922-1923 was 642; graduates, 114. The seventy-fourth session begins Sept. 25, 1923, and ends June 16, 1924.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Entrance requirements are two years of college work. The faculty embraces 21 professors, 98 lecturers, etc., a total of 119. The course covers five years of nine months each (including the hospital intern year). The total fees each year are for residents of Detroit $145; for nonresidents, $200. The Dean is Dr. W. H. MacCraken. The total registration for 1922-1923 was 192; graduates, 1. The thirty-ninth session begins Oct. 1, 1923, and ends June 21, 1924.

MINNESOTA

Minnesota, population 2,387,125, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 380,582 inhabitants.

Students intending to practice medicine in Minnesota, in addition to an accredited four-year high school education, must complete two years of college work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 125 professors and 135 instructors and assistants, a total of 260. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative analysis and organic chemistry; eight credits of zoology, and a reading and qualitative knowledge of French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work or of advanced laboratory work has been completed. Classes are graduated twice a year, in June and in December. Total fees are $199 for residents and $229 for nonresidents, each year of three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1922-1923 was 474; graduates, 85. The thirty-fifth session begins Sept. 26, 1923, and ends June 18, 1924. The summer quarter began June 24.

MISSISSIPPI

Mississippi, population 1,790,618, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,150 inhabitants.

Students desiring to practice medicine in Mississippi, in addition to a standard four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year are $155.50. The faculty numbers 19. The Dean is Dr. W. S. Leathers. The total registration for 1922-1923 was 57. The twenty-first session begins Sept. 19, 1923, and ends June 3, 1924.

MISSOURI

Missouri, population 3,404,055, has six medical colleges. St. Louis, population 772,897, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, which, with Kansas City, Kansas, has a population of 433,261, has two colleges, the Kansas City College of Medicine and Surgery and the Kansas City University of Physicians and Surgeons, neither of which is reported as approved or reputable by the Missouri State Board of Health. The School of Medicine of the University of Missouri is at Columbia, a town of 10,392 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 12 professors and 15 assistant professors, lecturers, etc., a total of 27. The course covers two years of thirty-six weeks each. The entrance requirements are two years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees are $100 for each year. Nonresidents of the state pay $10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1922-1923 was 79. The next session begins Sept. 11, 1923, and ends June 4, 1924.

Kansas City

KANSAS CITY COLLEGE OF MEDICINE AND SURGERY, Twenty-Third and Holmes Streets.—Organized in 1915 as an offshoot of the Eclectic Medical University, a Class C medical school, now extinct. It claims to be an eclectic college, but is reported not recognized as such by the National Eclectic Medical Association. Total registration for 1922-1923 was about 60; graduates, 23. Since this school is an offshoot of a Class C medical college and is *reported not recognized by the Missouri State Board of Health and by the licensing boards of forty-two other states*, no higher rating can be granted to it, pending an inspection, which it has refused.

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS, 729 Troost Street.—Originally chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title in 1918. Very liberal advanced

standing allowed for work done in osteopathic colleges; reported as still having osteopathic classes. Total enrolment in 1922-1923 was 58; graduates, 26. The Dean is Dr. A. M. Wilson. The next session begins Sept. 10, 1923, and ends May 29, 1924. Rated in Class C by the Council on Medical Education and Hospitals. *Reported not recognized by the licensing boards of Missouri and of forty-seven other states.*

St. Louis

Washington University School of Medicine, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 40 professors and 118 lecturers, instructors, etc., a total of 158. Two years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $315, $310, $310 and $315. The Dean is Dr. Nathaniel Allison. The total registration for 1922-1923 was 260; graduates, 52. The next session begins Sept. 27, 1923, and ends June 12, 1924.

St. Louis University School of Medicine, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 72 professors and 107 lecturers and assistants, a total of 179. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. The summer season is optional. The total fees are $300 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1922-1923 was 399; graduates, 77. The next session begins Oct. 1, 1923, and ends May 31, 1924.

St. Louis College of Physicians and Surgeons, Jefferson and Gamble Streets.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915, when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. Registration during 1922-1923 was approximately 65; graduates, 38. *This college is reported as not recognized by the licensing boards of Missouri and forty-six other states.*

NEBRASKA

Nebraska, population 1,296,372, has two medical colleges, the University of Nebraska College of Medicine and the Creighton University College of Medicine, both in Omaha, population 191,601.

Omaha

Creighton University College of Medicine, Fourteenth and Davenport Streets.—Organized in 1892 as the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. It has a faculty of 30 professors and 40 instructors, lecturers and assistants, a total of 70. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $195, $190, $190 and $200. The Dean is Dr. Hermann von W. Schultz. Total registration for 1922-1923 was 155; graduates, 35. The forty-second session begins Sept. 21, 1923, and ends May 31, 1924.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. The faculty is composed of 42 professors and 53 lecturers and instructors, total 95. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $165, $160, $150 and $150. The Dean is Dr. Irving S. Cutter. Total registration for 1922-1923 was 314; graduates, 58. The next session begins Sept. 24, 1923, and ends June 7, 1924.

NEW HAMPSHIRE

New Hampshire, population 443,083, has one medical college, located at Hanover, population 1,551.

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

Dartmouth Medical School.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 11 professors and 2 instructors, a total of 13. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. or B.S. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for each year are $250. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The total registration for 1922-1923 was 44. The next session opens Sept. 20, 1923, and ends June 18, 1924.

NEW YORK

New York State, population 10,384,829, has eight medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Cornell University Medical College, the University and Bellevue Hospital Medical College, Long Island College Hospital and the New York Homeopathic Medical College and Flower Hospital, are located in New York City, population 5,620,048. Albany Medical College is located in Albany, a city of 113,344 people. The University of Buffalo Medical Department is situated in Buffalo, population 506,775. The College of Medicine, Syracuse University, is in Syracuse, a city of 171,717 inhabitants.

Students who desire to practice in New York must complete two years of college work before entering on the study of medicine.

Albany

Albany Medical College, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. The faculty is composed of 25 professors and 82 instructors, assistants, etc., a total of 107. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytics), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $273, $255, $255 and $255. The Dean is Dr. Thomas Ordway. The total registration for 1922-1923 was 88; graduates, 14. The ninety-third session begins Sept. 24, 1923, and ends June 10, 1924.

Buffalo

University of Buffalo Medical Department, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 50 professors and 84 lecturers, assistants, etc., a total of 134. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $317; matriculation fee, $5. The Dean is Dr. C. Sumner Jones. Total registration for 1922-1923 was 237; graduates, 49. The seventy-eighth session begins Sept. 24, 1923, and ends June 11, 1924.

New York

Columbia University College of Physicians and Surgeons, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 107 professors and 245 instructors, demonstrators, etc., a total of 352. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, are required for admission. The work covers four years of eight months each. The Dean is Dr. William Darrach. The total fees for the four years, respectively, are $332, $332, $332 and $352. Total registration for 1922-1923 was 381; graduates, 95. The one hundred and sixteenth session begins Sept. 26, 1923, and ends June 4, 1924.

Cornell University Medical College, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. The faculty is composed of 63 professors and 110 assistants, lecturers, instructors, etc., a total of 173. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, $345, $335, $335 and $350. The Dean is Dr. Walter L. Niles. Total registration for 1922-1923 was 256; graduates, 63. The twenty-sixth session begins Sept. 24, 1923, and ends June 12, 1924.

Long Island College Hospital, 350 Henry Street, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 47 professors and 87 assistants, instructors, etc., a total of 134. Two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $356, $350, $350 and $380. The Dean is Prof. Adam M. Miller. Total registration for 1922-1923 was 346; graduates, 85. The sixty-sixth session begins Sept. 24, 1923, and ends May 29, 1924.

New York Homeopathic Medical College and Flower Hospital, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The course covers four years of eight months each. It has a faculty of 31 professors and 55 lecturers and assistants, a total of 86. The total fees for the four years are, respectively, $350, $300, $300 and $330. The Dean is Israel S. Kleiner, Ph.D. Total registration for 1922-1923 was 158; graduates, 18. The sixty-fourth session begins Sept. 21, 1923, and ends June 5, 1924.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 84 professors and 153 lecturers, instructors, etc., in all, 237. The course covers four years of eight months each. Entrance requirements are two years of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. The fees for each of the four years are $350. The Dean is Dr. Samuel A. Brown. Total registration for 1922-1923 was 435; graduates, 83. The next session begins Sept. 19, 1923, and ends June 11, 1924.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the four years are, respectively, $324, $324, $324 and $334. The faculty is composed of 32 professors and 85 associate and assistant professors, lecturers and instructors, a total of 117. The Dean is Dr. Herman G. Weiskotten. The total enrolment for 1922-1923 was 174; graduates, 35. The fifty-third session begins Sept. 19, 1923, and ends June 14, 1924.

NORTH CAROLINA

North Carolina, population 2,559,123, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,483. Wake Forest College School of Medicine is at Wake Forest, population 1,425.

Students intending to practice medicine in North Carolina must complete two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Two years of collegiate work are required for admission. The faculty is composed of 14 professors and 11 lecturers, assistants, etc., a total of 25. The fees for each year are $195. The Dean is Dr. I. H. Manning. The total registration for 1922-1923 was 76. The thirty-eighth session begins Sept. 20, 1923, and ends June 6, 1924.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 10 professors and 5 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for each year aggregate $200. The Dean is Dr. Thurman D. Kitchen. The total registration for 1922-1923 was 45. The twenty-second session begins Sept. 25, 1923, and ends June 13, 1924.

NORTH DAKOTA

North Dakota, population 645,680, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,010 people. It gives only the first two years of the medical course.

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are about $50 each year. The faculty consists of 9 professors and 9 instructors, a total of 18. The Dean is Dr. Harley E. French. The total registration for 1922-1923 was 38. The eighteenth session begins Sept. 22, 1923, and ends June 11, 1924.

OHIO

Ohio, population 5,759,394, has four medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 401,247 inhabitants. Cleveland, population 796,841, contains one medical school, Western Reserve University School of Medicine. Columbus, population 237,031, contains the Ohio State University College of Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden Avenue, Cincinnati General Hospital.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Two years of college work are required for admission. The faculty consists of 76 professors and 40 associates, assistants, etc., a total of 116. The course covers four years of eight months each. The fees for each of the four years, respectively, are $320, $320, $270 and $215. The Dean is Dr. Henry Page. The total registration for 1922-1923 was 246; graduates, 59. The next session begins Sept. 21, 1923, and ends June 14, 1924.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 32 professors and 14 lecturers and assistants, a total of 46. Two years of college work are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are $170, $160, $160 and $160. The Secretary is Dr. John K. Scudder. Total registration for 1922-1923 was 99; graduates, 16. The next session begins Sept. 14, 1923, and ends May 14, 1924.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. The faculty includes 18 professors and 145 lecturers, assistants, etc., a total of 163. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $275, $265, $250 and $260. The Dean is Dr. C. A. Hamann. The total registration for 1922-1923 was 178; graduates, 30. The eighty-first session begins Sept. 27, 1923, and ends June 12, 1924.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, 710 North Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 42 professors and 65 lecturers, demonstrators, etc., a total of 107. Two years of collegiate work are required for admission. The course covers four years of 33 weeks each. Tuition fees are $153 each year for residents of Ohio; for nonresidents, the fees are $300. The Dean is Dr. Eugene F. McCampbell. The total registration for 1922-1923 was 317; graduates, 40. The next session begins Oct. 1, 1923, and ends June 6, 1924.

OKLAHOMA

Oklahoma, population 2,028,283, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given on the academic campus at Norman, a city of about 5,004 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 91,295 and which is eighteen miles north of Norman.

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. It has a faculty of 37 professors and associate professors, 16 assistant professors and 20 instructors, a total of 73. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $62, $70, $50 and $50. The Dean is Dr. LeRoy Long, School of Medicine Building, Third and Stiles Street, Oklahoma City, Okla. The total registration for 1922-1923

was 136; graduates, 24. The twenty-fourth session begins September 17, 1923, and ends June 4, 1924.

OREGON

Oregon, population 783,389, has one medical college, the University of Oregon Medical School, located in Portland, a city of 258,288 population.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty of 50 professors and 67 lecturers, assistants, etc., a total of 117. Entrance requirements are two years of college work or its equivalent. Beginning with July 1, 1924, entrance requirements will be three years of college work. The course is four years of eight months each. The total fees for the four years are, respectively, $185, $180, $180 and $180 for residents of Oregon and $60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registration for 1922-1923 was 184; graduates, 26. The thirty-seventh session begins Oct. 2, 1923, and ends June 14, 1924.

PENNSYLVANIA

Pennsylvania, population 8,720,017, has six medical colleges. Of these, Philadelphia, having a population of 1,823,779, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 588,343.

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty consists of 62 professors, associate and assistant professors, and 154 lecturers, associates, instructors, etc., a total of 216. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also present evidence that a sufficient amount of work has been completed in physics, biology or zoology, chemistry, including general inorganic, organic and qualitative analysis, English and French or German. The first and second year classes are limited to 100 students; third and fourth to 130 each. The course embraces four years of study of thirty-three weeks each. The total fees for each of the four years are, respectively, $333, $325, $325 and $329 for men and $15 less per year for women students. The Dean is Dr. William Pepper. Total registration for 1922-1923 was 449; graduates, 123. The one hundred and fifty-eighth session begins Sept. 28, 1923, and ends June 18, 1924.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 46 professors, associate and assistant professors, and 131 associates, lecturers, demonstrators and instructors, a total of 177. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and a half months each. The fees are about $325 each year, with a matriculation fee of $5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1922-1923 was 595; graduates, 147. The ninety-ninth session begins Sept. 25, 1923, and ends June 6, 1924.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 20 professors and 60 assistants, lecturers, etc., in all 80. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $275, $279, $277 and $269. The Dean is Dr. Martha Tracy. The total registration for 1922-1923 was 119; graduates, 21. The seventy-fourth session begins Sept. 26, 1923, and ends June 11, 1924.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 230-34 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 51 professors and 65 lecturers, instructors, etc., in all 116. The work covers four years of eight and a half months each. Total fees are $260 each year. The Dean is Dr. William A. Pearson. The total registration for the college year 1922-1923 was 183; graduates, 31. The seventy-sixth session begins Oct. 1, 1923, and ends June 5, 1924.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 131. Two years of college work are required for admission. The fees for each of the four years, respectively, are $230, $225, $215 and $215. The Dean is Dr. Frank C. Hammond. The total registration for 1922-1923 was 131; graduates, 25. The twenty-third session begins Sept. 24, 1923, and ends June 13, 1924.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 17 professors and 128 associates, assistants, etc., 145 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics, biology and a reading knowledge of French or German, Italian or Spanish. The course of study is four years of eight and a half months each. The total fees for the four years, respectively, are $327.50, $312.50, $312.50 and $322.50. The Dean is Dr. Raleigh R. Huggins. The total registration for 1922-1923 was 194; graduates, 39. The thirty-eighth session begins Sept. 24, 1923, and ends June 11, 1924.

SOUTH CAROLINA

South Carolina, population 1,683,724, has one medical college, situated in Charleston, a city of 67,957 people.

Students intending to practice medicine in South Carolina must complete, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 32 professors and 33 lecturers, instructors, etc., a total of 65. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $165 annually. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1922-1923 was 131; graduates, 25. The ninety-fifth session begins Sept. 27, 1923, and ends June 5, 1924.

SOUTH DAKOTA

South Dakota, population 636,547, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,590 people.

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are $60 each year. The faculty numbers 11. The Dean is Christian P. Lommen, B.S. The total registration for 1922-1923 was 40. The seventeenth session begins Sept. 17, 1923, and ends June 14, 1924.

TENNESSEE

Tennesse, population 2,337,885, has three medical colleges. Of these, Vanderbilt University School of Medicine and Meharry Medical College are situated in Nashville, a city with a population of 118,342. The College of Medicine of the University of Tennessee is located in Memphis, population 162,351.

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addi-

tion to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. The faculty includes 53 professors and 91 assistants, instructors, etc., a total of 144. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $107, $102, $102 and $127 for residents of the state, and $100 more each year for nonresidents. The Acting Dean is Dr. James B. McElroy. Total registration for 1922-1923 was 174; graduates, 22. The next session begins Oct. 1, 1923, and ends June 9, 1924.

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 40 professors and 55 lecturers, a total of 95. Two years of collegiate work is required for admission. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $200, $200, $200 and $225. The Acting Dean is Dr. Lucius E. Burch. The total registration for 1922-1923 was 187, graduates, 38. The fiftieth session begins Sept. 26, 1923, and ends June 11, 1924.

MEHARRY MEDICAL COLLEGE, Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. The faculty is made up of 18 professors and 46 instructors, demonstrators, lecturers, etc., 64 in all. The work embraces four years of thirty-one weeks each. The total fees for the four years, respectively, are $162, $152, $152 and $172. The President is Dr. John J. Mullowney. Total registration for 1922-1923 was 185; graduates, 63. The forty-eighth session begins Oct. 2, 1923, and ends May 22, 1924.

TEXAS

Texas, population 4,663,228, has two medical colleges. The University of Texas School of Medicine is located at Galveston, a city of 44,255 inhabitants. The Baylor University College of Medicine is located in Dallas, population 158,976.

Students intending to practice medicine in Texas must complete at least a year of collegiate work, including courses in physics, chemistry, biology and modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty consists of 42 professors and 51 instructors and assistants, a total of 93. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are $208, $198, $188 and $188. The Dean is Dr. Walter H. Moursund. Total registration for 1922-1923 was 144; graduates, 17. The twenty-fourth session begins Oct. 1, 1923, and ends May 31, 1924.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 11 professors and 40 lecturers and instructors, a total of 51. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four year high school education. The total fees for the four years, respectively, are $108, $73, $45 and $33 for residents of the state, and $150 additional each year for nonresidents. The Acting Dean is Dr. W. Keiller. Total registration for 1922-1923 was 277; graduates, 42. The thirty-third session begins Sept. 30, 1922, and ends May 31, 1923.

UTAH

Utah, population 449,396, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 118,110 people.

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least one year of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. Two years of collegiate work are required for admission. Beginning in 1924 three years of college work will be required for admission. The medical faculty consists of 11 professors and 15 lecturers and assistants, a total of 26. The fees are $150 each year. The Dean is Dr. Ralph O. Porter. Total registration for 1922-1923 was 37. The seventeenth session begins Sept. 27, 1923, and ends June 30, 1924.

VERMONT

Vermont, population 352,428, has one medical school, located at Burlington, a town of 22,779 people.

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 44. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees for each of the first three years are $200 and $225 for the fourth year. Nonresidents are charged an additional $100 each year. The Dean is Dr. H. C. Tinkham. The total registration for 1922-1923 was 125; graduates, 23. The next session begins Sept. 19, 1923, and ends June 20, 1924.

VIRGINIA

Virginia, population 2,309,187, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 10,688, and the Medical College of Virginia at Richmond, population 171,667.

Students desiring to practice in Virginia must be graduates of medical colleges which require that all students admitted shall have completed two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 19 professors and 27 lecturers, instructors, assistants, etc., a total of 46. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. Total fees for the four years, respectively, are $235, $235, $185 and $175. The Dean is Dr. Theodore Hough. The total registration for 1922-1923 was 168; graduates, 27. The ninety-fifth session begins Sept. 13, 1923, and ends June 10, 1924.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 45 professors and 80 lecturers, instructors, etc., a total of 125. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $230, $230, $220 and $250. The Dean is Dr. Manfred Call. The total registration for 1922-1923 was 257; graduates, 43. The eighty-fifth session begins Sept. 12, 1923, and ends June 3, 1924.

WEST VIRGINIA

West Virginia, population 1,463,701, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,127 population.

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 15. Fees: For residents of the state, $90 each year; for nonresidents, $240. Cadets pay laboratory fees only. The Dean is Dr. John N. Simpson. The total registration for 1922-1923 was 104. The next session begins Sept. 17, 1923, and ends June 10, 1924.

WISCONSIN

Wisconsin, population 2,632,067, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 38,378 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 457,147 people.

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 19 professors and 47 lecturers, instructors, etc., a total of 66. Tuition fees: for residents of the state, $115 for first year and $95 for second year; for nonresidents, $210 for first year and $185 for second year. The Dean is Dr. Charles R. Bardeen. The registration for 1922-1923 was 156. The sixteenth session begins Sept. 26, 1923, and ends June 23, 1924.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 98. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern language. The curriculum covers four years of eight and a half months each. The fees for the four years, respectively, are $305, $295, $295 and $275. The Dean is Dr. Louis F. Jermain; the Dean of students is Dr. Eben J. Carey. The registration for 1922-1923 was 208; graduates, 20. The twelfth session begins Oct. 1, 1923, and ends June 11, 1924.

PHILIPPINE ISLANDS

The Philippine Archipelago, with a population of 10,607,872, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the University of St. Thomas College of Medicine and Surgery. They are located in the city of Manila, which in 1914 had a population of 283,613.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 35 professors and 39 lecturers, assistants, etc., a total of 74. A two-year collegiate course leading to the degree of bachelor of arts is required for admission, including courses in English, physics, chemistry, biology and either French or German. The course extends over five years. In the fifth year the students are assigned as clinical clerks in the Philippine General Hospital. The fees for the four years, respectively, are $78, $84, $64 and $56. The Dean is Dr. Fernando Calderon. The total registration for 1922-1923 was 130; graduates, 17. The seventeenth session began July 1, 1923, and ends April 4, 1924.

UNIVERSITY OF ST. THOMAS COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907. The faculty includes 16 professors and 8 assistants, instructors, etc., a total of 24. The course extends over five years. The Dean is Jose L. de Castro. The total registration for 1921-1922 was 403; graduates, 45. The next session begins July 2, 1923, and ends March 31, 1924.

CANADA

The Dominion of Canada has nine medical colleges, all of which require a six-year course, including courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Offers the first five years of the six-year medical course. The faculty numbers 62. Fees for the first year are $130; for the second, third, fourth and fifth years, each $180. The Registrar is Cecil E. Race, M.A. The registration for 1922-1923 was 102. The eleventh session begins Sept. 24, 1923, and ends May 16, 1924.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, WINNIPEG.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. The faculty numbers 114. The total fees for the five years, respectively, are $180, $175, $185, $185 and $175. Matriculation requirements include two years of college work in the Faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is Dr. S. Willis Prowse. Total registration for 1922-1923 was 263; graduates, 22. The next session begins Sept. 18, 1923, and ends May 18, 1924.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 23 professors and 29 lecturers and demonstrators, a total of 52. Requires matriculation, examination and a graded course of six years, including premedical courses in physics, chemistry and biology. The fees are $200 each year. The total registration for 1922-1923 was 149; graduates, 20. The Dean is Dr. John Stewart. The next session begins Sept. 10, 1923, and ends May 13, 1924.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 52 professors and 126 lecturers, associates, etc., a total of 178. The fees are $163 for the first four years and $191 for the fifth year. The Dean is Dr. Alexander Primrose. The total registration for 1922-1923 was 977; graduates, 197. The next session begins Sept. 25, 1923, and ends May 31, 1924.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 23 professors and 27 assistants, instructors, etc., a total of 50. The fees for the six years are, respectively, $141, $146, $141, $155, $155 and $145; fee for M.D., C.M. degrees, $30. The course covers six years of thirty-two teaching weeks each, the first year including courses in physics, chemistry, biology, English and French or German. The total registration in 1922-1923 was 260; graduates, 36. The Dean is Dr. J. C. Connell. The next session begins Sept. 26, 1923, and ends May 28, 1924.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, London.—Organized in 1881 as the Western University, Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. The faculty numbers 59. Two years of premedical college work are required for admission, including courses in physics, chemistry and biology. The medical course covers four years of eight months each. The total fees for the four years, respectively, are $155, $163, $163 and $183. The Dean is Dr. Paul S. McKibben. Total registration for 1922-1923 was 119; graduates, 24. The next session begins Oct. 1, 1923, and ends May 30, 1924.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. The session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over six years of eight months each, including one preliminary year. The faculty numbers 150. The total fees each of the first five years are $222; for the sixth year, $252. The total registration for 1922-1923 was 721; graduates, 126. The Dean is Dr. C. F. Martin. The next session begins Sept. 24, 1923, and ends June 1, 1924.

UNIVERSITY OF MONTREAL MEDICAL FACULTY, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name, by act of Parliament, in 1920. A class was graduated in 1843 and in each subsequent year. The faculty numbers 81. The course extends over six years, including premedical courses in physics, chemistry and biology. The total fees each of the five years, respectively, are $207, $200, $242, $214 and $207. The Dean is Louis de Lotbiniere Harwood. The total registration for 1922-1923 was 300; graduates, 59. The next session begins Sept. 15, 1923, and ends June 15, 1924.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 37. The fees are $135 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Secretary is Dr. Arthur Vallée, Quebec. Total registration for 1922-1923 was 170; graduates, 9.

Names of existing colleges are in heavy faced type

Number	Name and Address	Organized or Name assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: One Year College	Admission Requirements: Two Years College	Classification by the Council on Medical Education	Key No. in American Medical Directory	Number
1.	**Alabama, Medical College of,** Mobile	1859	1860	1862-63[2]	1907	2	....	....	.....	Ala.2	1
2.	**Alabama, University of, School of Med., Tuscaloosa**[3]	1907	1908	1921–	....	1	1914	1915	A,'07-'24	Ala.2	2
3.	**Albany Medical College,** Albany, N. Y.	1839	1839	.....	.....	.....	1914	1918	A,'07-'24	N.Y.3	3
4.	**American Coll. of Med. and Surg., Electic,**[4] Chicago	1901	1903	.....	1907	43	....	....	B,'07	Ill.22	4
5.	**American Coll. of Med. in Pennsylvania,** Philadelphia[4]	1853	....	.....	1880	202	....	....	.....	Pa.14	5
6.	**American Medical College, Eclectic, St. Louis**[5]	1873	1874	.....	1912	206	....	....	C,'07-'12	Mo.10	6
7.	**American Medical College, Eclectic, Cincinnati**	1839	.....	.....	1857	.....	....	....	.....	Ohio 20	7
8.	**American Medical Missionary College,** Chicago	1895	1899	.....	1910	.....	....	....	B,'07-'10	Ill.19	8
9.	**Arkansas Industrial Univ., Med. Dept., Little Rock**	1879	1880	.....	1899	10	....	....	.....	Ark.1	9
10.	**Arkansas, University of, Medical Dept.,** Little Rock	1899	1900	.....	.....	9	1915	1918	B,'07-'18; A,'19-'24	Ark.1	10
11.	**Atlanta College of Physicians and Surgeons, Atlanta**[6]	1898	1899	.....	1913	12	....	....	A,'07-'09; B,'10-'13	Ga.11	11
12.	**Atlanta Medical College,** Atlanta	1854	1855	1862-64	1898	11	....	....	.....	Ga.5	12
	Atlanta Medical College, reestablished	1913	1914	.....	1917	119	1914	1918	A,'14-'17	Ga.5	
13.	**Atlanta School of Medicine, Atlanta**[6]	1905	1908	.....	1913	12	....	....	A,'07-'09; B,'10-'13	Ga.12	13
14.	**Atlantic Medical College,** Baltimore	1907	1908	.....	1910	325	....	....	C,'08-'10	Md.8	14
15.	**Baltimore Medical College,** Baltimore	1881	1882	.....	1913	.....	....	....	A,'07-'13	Md.4	15
16.	**Baltimore University School of Medicine,** Baltimore	1884	1885	.....	1907	.....	....	....	C,'07	Md.6	16
17.	**Barnes Medical College,** St. Louis	1900	1903	.....	1911	266	....	....	B,'07-'11	Mo.28	17
18.	**Baylor University School of Medicine,** Dallas, Tex	1900	1902	.....	.....	372	1913	1918	B,'07-'15; A,'16-'20	Tex.4	18
19.	**Beach Medical Institute,** Indianapolis	1896	1896	.....	1898	.....	....	....	.....	Ind.15	19
20.	**Beaumont Hospital Medical College, St. Louis**	1886	1887	.....	1901	214	....	....	.....	Mo.24	20
21.	**Bell Medical College,** Dallas, Tex	1900	1904	.....	1905	82	....	....	.....	Tex.8	21
22.	**Bellevue Hospital Medical College,** New York City	1861	1862	.....	1898	363	....	....	.....	N.Y.10	22
23.	**Bennett College of Eclectic Med. and Surg.,** Chicago	1868	1870	.....	1908	24-214	....	....	B,'07-'08	Ill.8	23
24.	**Bennett Medical College,** Chicago	1900	1900	.....	1915	23-214	1915	....	B,'09-'15	Ill.8	24
25.	**Berkshire Medical College,** Pittsfield, Mass	1823	1824	.....	1907	.....	....	....	.....	Mass.2	25
26.	**Birmingham Medical College,** Birmingham, Ala	1894	1896	.....	1915	.....	....	....	A,'07-'09; B,'10-'15	Ala.4	26
27.	**Boston University School of Medicine,** Boston[7]	1873	1874	.....	.....	.....	1914	1916	A,'07-'24	Mass.5	27
28.	**Bowdoin Medical School,** Portland, Me	1915	1915	.....	1921	224	1912	1916	A,'15-'21	Me.1	28
29.	**Brown University, Medical Dept.,** Providence, R. I	1811	1816	.....	1827	.....	....	....	.....	R.I.1	29
30.	**Buffalo, University of, Dept. of Med.,** Buffalo, N. Y	1846	1847	.....	.....	.....	1914	1918	A,'07-'24	N.Y.6	30
31.	**California Eclectic Medical College,** Los Angeles	1907	1908	.....	1915	32	....	....	C,'07-'15	Cal.4	31
32.	**California Medical College,** San Francisco[8]	1870	1880	.....	1908	31	....	....	.....	Cal.4	32
33.	**California, University of, Med. School,** San Francisco	1872	1873	.....	.....	357	....	1905	A,'07-'24	Cal.2	33
34.	**Castleton Medical Academy,** Castleton, Vt	1818	....	.....	1821	415-35	....	....	.....	Vt.1	34
35.	**Castleton Medical College,** Castleton, Vt	1841	....	.....	1861	34-416	....	....	.....	Vt.1	35
36.	**Central College of Phys. and Surgs.,** Indianapolis	1879	1880	.....	1905	168	....	....	.....	Ind.9	36
37.	**Central Medical College of St. Joseph (Mo.)**	1894	1895	.....	1905	120	....	....	.....	Mo.29	37
38.	**Chaddock School of Medicine,** Quincy, Ill	1898	1898	.....	1899	330	....	....	.....	Ill.12	38
39.	**Charity Hospital Medical College,** Cleveland	1894	1895	.....	1900	412	....	....	.....	Ohio 11	39
40.	**Charity Hospital Medical College,** New Orleans	1873	....	.....	1877	.....	....	....	.....	La.3	40
41.	**Chattanooga Medical College, Chattanooga, Tenn.**[9]	1889	1889	.....	1910	.....	....	....	B,'07-'08; C,'09-'10	Tenn.9	41
42.	**Chattanooga National Medical College,** Tenn. (colored)	1889	....	[1901-02]	1908	.....	....	....	C,'07-'08	Tenn.18	42
43.	**Chicago College of Medicine and Surgery,** Chicago	1897	1898	.....	1917	4-212	1915	1918	B,'07-'17	Ill.22	43
44.	**Chicago Homeopathic Medical College,** Chicago	1870	1877	.....	1894	.....	....	....	.....	Ill.10	44
45.	**Chicago Hospital College of Medicine,** Chicago	1911	1915	.....	1919	47	....	....	C,'11-'19	Ill.42	45
46.	**Chicago Medical College,** Chicago	1864	1885	.....	1891	204-286	....	....	.....	Ill.6	46
47.	**Chicago Medical School,** Chicago[10]	1919	1920	.....	.....	45	....	....	C,'19-'24	Ill.42	47
48.	**Chicago Physio-Medical College,** Chicago	1901	1902	.....	1909	49-63	....	....	.....	Ill.5	48
49.	**Chicago Physio-Medical Institute,** Chicago	1895	1899	.....	1901	48-63	....	....	.....	Ill.5	49
50.	**Cincinnati College of Med. and Surg.,** Cincinnati	1849	1850	.....	1902	.....	....	....	.....	Ohio 8	50
51.	**Cincinnati Medical College,** Cincinnati	1819	.....	.....	1846	236	....	....	.....	Ohio 27	51
52.	**Cincinnati, University of, College of Medicine**	1911	1913	.....	.....	236-291	1910	1913	A,'12-'24	Ohio 41	52
53.	**Cleveland College of Phys. and Surg., Cleveland**[11]	1886	1890	.....	1913	412-426	....	....	A,'07-'12	Ohio 12	53
54.	**Cleveland Homeopathic Medical College**	1888	1889	.....	1910	56-57	....	....	B,'07-'10	Ohio 26	54
55.	**Cleveland Medical College, Cleveland**[12]	1843	1844	.....	1881	426	....	....	.....	Ohio 6	55
56.	**Cleveland Medical College, Homeopathic**	1850	1894	.....	1898	54	....	....	.....	Ohio 22	56
57.	**Cleveland-Pulte Medical College, Cleveland**	1910	1911	.....	1914	54-300	....	....	B,'10-'11; C,'12-'14	Ohio 26	57
58.	**Cleveland Univ. of Med. and Surg., Cleveland.—E**	1894	1895	.....	1898	54-151-422	....	....	.....	Ohio 7	58
59.	**Clinical School of Medicine,** Woodstock, Vt	1827	....	.....	1835	414	....	....	.....	Vt.3	59
60.	**College of American Med. and Surg.,** Macon, Ga	1874	1875	1877-81	1884	312-323	....	....	.....	Ga.8	60
61.	**Coll. of Homeo. M. & S. of Kansas City Univ.,** (Mo.)	1898	1897	.....	1900	145	....	....	.....	Mo.31	61
62.	**College of Medical Evangelists, Loma Linda,** Calif	1909	1914	.....	.....	.....	1914	1915	C,'10-'17; B,'18-'22; A,'22-'24	Cal.13	62
63.	**College of Med. and Surg., Physio-Medical,** Chicago	1899	1900	.....	1911	48-49	....	....	C,'07-'11	Ill.5	63
64.	**College of Medicine of Maryland,** Baltimore	1807	1810	.....	1812	379	....	....	.....	Md.1	64
65.	**College of Philadelphia, Department of Medicine** (Pa.)	1765	1768	1772-79	1791	301	....	....	.....	Pa.1	65

NOTES AND REFERENCES

The above colleges are known to have had a bona fide existence in accordance with the dates shown. Information regarding other institutions to which there is some question or which were reported as fraudulent or not in good standing in the states in which they existed may be obtained in the American Medical Directory.

The purpose of this list is to give the dates when each institution existed under the name given; the years when there were no graduates; the years when the institutions required for admission, respectively, one year and two years of collegiate work, and the rating of the college by the Council on Medical Education. Full information in regard to each institution under its various names may be found in the American Medical Directory, key number of which is given in the last column.

1. Dates separated by a hyphen indicate that the intervening years are included among the years when there were no graduates; not so if separated by a comma. Figures in brackets indicate the only years for which the records show there were graduates.

2. Discontinued clinical teaching in 1920 when the school was moved from Mobile to Tuscaloosa.

3. Eclecticism dropped in 1905. In 1907 changed its name to the Chicago College of Medicine and Surgery and became by affiliation the medical department of Valparaiso (Ind.) University.

4. Was organized under this title and was also known as the Eclectic Medical College of Philadelphia. Former title dropped in 1856. Name changed in 1865 to the Philadelphia University of Medicine and Surgery. Under this title, according to report, it became a fraudulent institution during the last few years of its existence. Extinct in 1880.

5. Two classes graduated each year 1874 to 1883 inclusive; since then one class each year.

6. In 1913 the Atlanta College of Physicians and Surgeons merged with the Atlanta School of Medicine and reassumed the name of Atlanta Medical College.

7. This was a homeopathic medical school until 1918 when it became nonsectarian.

8. Was located in Oakland, California, 1879 to 1887.

9. Was the medical department of Grant University, which in 1908 changed its name to the University of Chattanooga.

10. Has advertised under the title "Fort Dearborn Hospital Medical School" and in 1919 changed its name to the "Chicago Medical School."

11. This was the medical department of the Ohio Wesleyan University.

12. Sometimes referred to as the Hudson Medical College.

Number	Name and Address	Organized or Assumed	First Graduated	Years when Class Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: One Year College	Admission Requirements: Two Years College	Classification by the Council on Medical Education	Key No. in American Medical Directory	Number
66.	College of Physicians and Surgeons, Little Rock, Ark.	1905	1907	.....	1911	.....	.....	.....	B,'07-'11	Ark.2	65
67.	College of Physicians and Surgeons, Los Angeles[20]...	1903	1905	.....	1920	401	1914	1916	B,'07-'20	Cal.9	67
68.	College of Physicians and Surgeons, San Francisco...	1895	1897	.....	1921	.....	.....	.....	B,'07; C,'08-'21	Cal.7	68
69.	College of Physicians and Surgeons, Chicago	1882	1883	.....	1911	374	.....	.....	A,'07-'11	Ill.11	69
70.	College of Physicians and Surgeons of the Upper Mississippi, Rock Island, Ill.	1849	1849	.....	1849	72	.....	.....	.....	Ill.24	70
71.	College of Phys. and Surgs. of Indiana, Indianapolis.	1879	1874	.....	1879	223	.....	.....	.....	Ind.6	71
72.	College of Physicians and Surgeons, Keokuk, Ia.[14]...	1849	1850	.....	1909	70-375	.....	.....	.....	Ia.1	72
73.	Coll. of Physicians and Surgeons, Kansas City, Kan.	1894	1895	.....	1905	376	.....	.....	.....	Kan.4	73
74.	Coll. of Physicians and Surgeons of Baltimore (Md.)	1872	1873	.....	1915	379	1914	.....	A,'07-'15	Md.3	74
75.	College of Physicians and Surgeons, Boston	1880	1881	.....	.....	.....	.....	.....	C,'07-'24	Mass.6	75
76.	College of Phys. and Surgs. of Kansas City (Mo.)...	1890	1870	.....	1890	185	.....	.....	.....	Mo.8	76
77.	Coll. of Physicians and Surgeons of St. Joseph (Mo.)	1873	1879	.....	1902	333	.....	.....	.....	Mo.15	77
78.	College of Physicians and Surgeons of St. Louis....	1899	1870	1874-79	1879	335	.....	.....	.....	Mo.7	78
79.	College of Phys. and Surgs. in the City of New York	1807	1811	.....	1856	86-87-196	.....	.....	.....	N.Y.1	79
80.	College of Physicians and Surgeons of the Western District of New York, Fairfield, N. Y.	1812	1816	.....	1840	.....	.....	.....	.....	N.Y.2	80
81.	College of Phys. and Surgs., Homeopathic, Buffalo[20].	1879	1880	.....	1884	.....	.....	.....	.....	N.Y.17	81
82.	College of Physicians and Surgeons, Memphis, Tenn..	1903	1907	.....	1911	.....	.....	.....	B,'07-'11	Tenn.6	82
83.	College of Physicians and Surgeons, Dallas, Tex.....	1900	1905	.....	1910	21	.....	.....	C,'07-'10	Tex.8	83
84.	Colorado School of Medicine, Boulder	1883	1885	1889	1907	85	.....	.....	A,'07	Colo.2	84
85.	Colorado, University of, School of Medicine, Denver.	1907	1908	.....	.....	84	.....	1910	A,'07-'24	Colo.2	85
86.	Columbia College, Medical Faculty, New York City..	1768	1768	1768-1801, 1808,'09, '11,'14	1814	79-196	.....	.....	.....	N.Y.1	86
87.	Columbia Univ. Coll. of Phys. and Surgs., N. Y. City	1860	1807	.....	.....	79-86-196	.....	1910	A,'07-'24	N.Y.1	87
88.	Columbian College, Med. Dept., Washington, D. C....	1825	1826	1834,'38, '40-'53	1873	90-132	.....	.....	.....	D.C.1	88
89.	Columbian Medical College, Kansas City, Mo.	1888	1889	.....	1901	.....	.....	.....	.....	Mo.41	89
90.	Columbian University Med. Dept., Washington, D. C.	1873	1874	.....	1904	88-132	.....	.....	.....	D.C.1	90
91.	Columbus Medical College, Columbus, Ohio.....	1875	1876	.....	1892	343	.....	.....	.....	Ohio 14	91
92.	Cooper Medical College, San Francisco.....	1895	1895	.....	1912	405-228	.....	.....	A,'07-'12	Cal.1	92
93.	Cornell University Medical College, New York City...	1898	1899	.....	.....	.....	.....	1908	A,'07-'24	N.Y.20	93
94.	Creighton (John A.) Medical College, Omaha, Neb...	1892	1892	.....	.....	177	1914	1918	A, 07-'11; B,'12-'16; A,'17-'24	Neb.6	94
95.	Curtis Physio-Medical Inst., Marion-Indianapolis, Ind.	1891	1892	.....	1900	.....	.....	.....	.....	Ind.12	95
96.	Dallas Medical College, Dallas, Tex.	1900	1901	.....	1904	19	.....	.....	.....	Tex.10	96
97.	Dartmouth Medical School, Hanover, N. H.[20]...	1797	1798	1915	.....	.....	.....	1910	A,'07-'24	N.H.1	97
98.	Dayton Medical University, Dayton, Ohio.....	1886	1887	.....	1890	.....	.....	.....	.....	Ohio 37	98
99.	Dearborn Medical College, Chicago	1885	1894	.....	1907	.....	.....	.....	C,'07	Ill.23	99
100.	Denver and Gross College of Medicine, Denver.....	1902	1903	.....	1911	85	.....	.....	A,'07-'11	Colo.5	100
101.	Denver College of Medicine, Denver.....	1881	1882	.....	1902	100	.....	.....	.....	Colo.1	101
102.	Denver College of Physicians and Surgeons, Denver..	1902	1903	.....	1909	103-427	.....	.....	C,'08-'09	Colo.4	102
103.	Denver Homeopathic College, Denver.....	1894	1895	.....	1907	107-427	.....	.....	C,'07	Colo.4	103
104.	Detroit College of Medicine, Detroit.....	1885	1888	.....	1913	105	.....	.....	A,'07-'11; B,'12-'13	Mich.7	104
105.	Detroit College of Medicine and Surgery, Detroit.....	1913	1914	.....	.....	104	1914	1918	A,'13-'24	Mich.7	105
106.	Detroit Homeopathic College, Detroit.....	1889	1890	.....	1913	.....	.....	.....	C,'07-'12	Mich.11	106
107.	Detroit Homeopathic Medical College, Detroit.....	1871	.....	.....	1879	.....	.....	.....	.....	Mich.3	107
108.	Detroit Medical College, Detroit.....	1885	1889	.....	1885	106	.....	.....	.....	Mich.3	108
109.	Drake University, College of Med., Des Moines, Iowa	1903	1904	.....	1913	172-179	.....	.....	A,'07-'13	Ia.6	109
110.	Dunham Medical College, Chicago.....	1865	1896	.....	1902	150	.....	.....	.....	Ill.18	110
111.	Eclectic College of Medicine and Surgery, Cincinnati	1845	1846	.....	1859	116	.....	.....	.....	Ohio 31	111
112.	Eclectic College of Phys. and Surgs., Indianapolis..	1890	1891	.....	1894	.....	.....	.....	.....	Ind.16	112
113.	Eclectic Medical College of Indiana, Indianapolis....	1900	1903	.....	1908	.....	.....	.....	C,'07-'08	Ind.17	113
114.	Eclectic Medical College, Cincinnati.....	1910	1910	.....	.....	116	1915	1918	B,'10-'24	Ohio 2	114
115.	Eclectic Medical College of the City of New York....	1898	1897	.....	1913	.....	.....	.....	C,'07-'13	N.Y.13	115
116.	Eclectic Medical Institute, Cincinnati.....	1845	1846	.....	1910	114-441	.....	.....	B,'07-'10	Ohio 2	116
117.	Eclectic Medical University, Kansas City, Kan.....	1897	1897	.....	1908	118-422	.....	.....	C,'07-'08	Kan.7	117
118.	Eclectic Medical University, Kansas City, Mo.[17]...	1898	1900	1907-09	1918	117-422	.....	.....	C,'08-'18	Mo.32	118
119.	Emory University School of Medicine, Atlanta, Ga....	1915	1917	.....	.....	12	1914	1918	A,'17-'24	Ga.1	119
120.	Ensworth-Central Medical College, St. Joseph, Mo...	1905	1905	.....	1907	121	.....	.....	B,'07	Mo.22	120
121.	Ensworth Medical College, St. Joseph, Mo.[15]... Reestablished	1889	1889	1892	1905	120	.....	.....	.....	.....	121
		1907	1908	.....	1914	120	.....	.....	B,'07-'09; C,'10-'14	Mo.22	
122.	Epworth College of Medicine, Oklahoma City.....	1904	1907	.....	1910	208	.....	.....	C,'07-'10	Okla.2	122
123.	Flint Medical College of New Orleans University....	1901	1902	1911	1911	274	.....	.....	B,'07-'08; C,'09-'11	La.4	123
124.	Fordham University School of Med., New York City..	1907	1909	.....	1921	.....	1911	1918	B,'08-'09; A,'10-'12; B,'13; A,'14-'21	N.Y.43	124
125.	Fort Wayne College of Medicine, Fort Wayne, Ind....	1879	1880	1899	1905	168	.....	.....	.....	Ind.10	125
126.	Fort Worth School of Medicine, Fort Worth, Tex.[19]...	1909	1895	.....	1918	.....	1916	.....	A,'07-'09; B,'10-'11; C,'12-'13; B,'14-'18	Tex.3	126
127.	Franklin Medical College, Philadelphia.....	1847	.....	.....	1852	.....	.....	.....	.....	Pa.5	127
128.	Galveston Medical College, Galveston, Tex.....	1864	.....	.....	1873	355	.....	.....	.....	Tex.1	128
129.	Gate City Medical College, Texarkana, Tex.†	1902	1904	1909-10	1911	.....	.....	.....	C,'07-'11	Tex.7	129
130.	General Medical College, Chicago[20]	1902	1923	.....	.....	142	.....	1922	[20]	Ill.4	130
131.	Geneva Medical College, Geneva, N. Y.	1881	1882	.....	1872	231	.....	.....	.....	N.Y.4	131
132.	George Washington Univ. Med. Sch. Washington, D. C.	1904	1905	.....	.....	88-90	1914	1918	A,'07-'24	D.C.1	132
133.	Georgetown Univ. School of Med., Washington, D. C..	1851	1852	.....	.....	.....	.....	1912	A,'07-'11; B,'12; A,'13-'24	D.C.2	133
134.	Georgia Coll. of Eclectic Med. and Surgery, Atlanta..	1888	1887	.....	1916	135	.....	.....	C,'07-'16	Ga.9	134
135.	Georgia Eclectic Medical College, Atlanta.....	1877	1878	.....	1886	134	.....	.....	.....	Ga.4	135
136.	Georgia, University of, Medical Department, Augusta	1873	1874	.....	.....	272	1914	1918	A,'07-'09; B,'10-'12; A,'14-'24	Ga.1	136
137.	Graffenburg Institute, Dadeville, Ala.....	1852	1856	.....	1862	.....	.....	.....	.....	Ala.1	137
138.	Grand Rapids Medical College, Grand Rapids, Mich...	1867	1868	.....	1907	.....	.....	.....	B,'07	Mich.10	138
139.	Gross Medical College, Denver.....	1907	1908	.....	1902	100	.....	.....	.....	Colo.3	139
140.	Hahnemann Hospital College of San Francisco.....	1889	1889	.....	1902	141-146	.....	.....	.....	Cal.5	140
141.	Hahnemann Medical College, San Francisco.....	1881	1884	.....	1888	140-146	.....	.....	.....	Cal.5	141
142.	Hahnemann Medical College and Hospital, Chicago....	1859	1861	.....	1922	130	1914	1916	A,'07-'11; B,'12-'22	Ill.4	142

* Offers only the first two years of the medical course.

† Reported fraudulent or not in good standing in the state in which the college is located.

13. In 1909, became the Medical Department of the University of Southern California. Suspended in 1920.

14. Went under the name "Medical Department of the University of Iowa" from 1854 to 1870 inclusive.

15. For the first year (1879-80) this college bore the title: "Homeopathic College of Physicians and Surgeons."

16. Graduated its last class in 1914 when clinical teaching was abandoned.

17. Removed to Kansas City, Kansas, in 1907, changed its name in 1908 to the Western Eclectic College of Medicine and Surgery; returned to Kansas City, Mo., in 1909 and resumed its former title. Was reported not recognized by the Missouri State Board of Health. Extinct 1918.

18. This school in 1905 was merged with the Central Medical College, St. Joseph, Mo., taking the name of the Ensworth-Central Medical College. In 1907, however, the college reassumed the name of the Ensworth Medical College. It became extinct in 1914.

19. This was the medical department of the Fort Worth University 1894 to 1911; of the Texas Christian University 1911 to 1918.

20. The General Medical College succeeded the Hahnemann Medical College of Chicago. It is at present unclassified.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: One Year College	Admission Requirements: Two Years College	Classification by the Council on Medical Education	Key No. in American Medical Directory	Number
143.	Hahnemann Medical Coll. and Hosp. of Philadelphia	1885	1888	.....	1885	144-155	1914	1917	A,'07-'24	Pa.9	143
144.	Hahnemann Medical College of Philadelphia	1850	1870	.....	1900	143-152	....	....	.....	Pa.9,18	144
145.	Hahnemann Med. Coll. of the Kansas City Univ. (Mo.)	1920	1921	.....	1926	61-146	....	....	.....	Mo.31	145
146.	Hahnemann Med. Coll. of the Pacific, San Francisco	1908	1908	.....	1918	141-140	1915	....	A,'07-'09; B,'10-'18	Cal.6	146
147.	Hampden Sydney College Med. Dept., Richmond, Va.	1838	1839	.....	1854	230	....	....	.....	Va.4	147
148.	Harvard University, Medical School of, Boston	1782	1788	.....	....	.....	....	1920	A,'07-'24	Mass.1	148
149.	Harvey Medical College, Chicago	1881	1885	.....	1905	.....	....	....	.....	Ill.13	149
150.	Hering Medical College, Chicago	1902	1903	.....	1913	.....	....	....	C,'07-'13	Ill.15	150
151.	Homeopathic Hospital College, Cleveland	1870	1871	.....	1894	58-421-425	....	....	.....	Ohio 7	151
152.	Homeopathic Medical College of Missouri, St. Louis	1859	1860	1862-64	1909	.....	....	....	C,'07-'09	Mo.5	152
153.	Homeopathic Med. Coll. of Pennsylvania, Philadelphia	1848	1849	.....	1869	144-143	....	....	.....	Pa.9	153
154.	Homeo. Med. Coll. of the State of New York, N. Y. City	1858	1861	.....	1869	276	....	....	.....	N.Y.9	154
155.	Homeopathic Medical College for Women, Cleveland	1892	.....	.....	1870	151	....	....	.....	Ohio 33	155
156.	Hospital College of Medicine, Louisville	1874	1875	.....	1907	.....	....	....	B,'07	Ky.5	156
157.	Hospital Medical College, Eclectic, Atlanta	1909	1911	.....	1911	.....	....	....	C,'09-'11	Ga.18	157
158.	Hospital Medical College of Evansville (Ind.)	1892	1893	.....	1896	.....	....	....	.....	Ind.12	158
159.	Howard University School of Med., Washington, D. C.	1869	1871	.....	....	.....	1910	1914	B,'07-'09; A,'10-'24	D.C.3	159
160.	Humboldt Medical College, St. Louis[21]	1859	.....	.....	1869	334	....	....	.....	Mo.4	160
161.	Hygeia Medical College, Cincinnati[22]	1896	1896	1897	1899	.....	....	....	.....	Ohio 39	161
162.	Illinois College Medical Department, Jacksonville	1843	.....	.....	1848	.....	....	....	.....	Ill.2	162
163.	Illinois Medical College, Chicago	1924	1895	.....	1900	.....	....	....	B,'07; C,'08-'10	Ill.17	163
164.	Illinois, University of, College of Medicine, Chicago	1911	1912	.....	....	74	1913	1914	A,'07-'24	Ill.11	164
165.	Indiana Electic Medical College, Indianapolis	1889	.....	.....	1900	.....	....	....	.....	Ind.11	165
166.	Indiana Medical College, Indianapolis	1869	1870	.....	1878	223	....	....	.....	Ind.4	166
167.	Indiana Medical College, La Porte, Ind.[23]	1844	.....	.....	1849	.....	....	....	.....	Ind.1	167
168.	Ind. Med. Coll., S. of M. of Purdue Univ., Indianapolis	1905	1908	1908	1908	169	....	....	A,'07-'08	Ind.18	168
169.	Indiana University School of Medicine, Indianapolis	1903	1908	.....	....	.....	1909	1910	A,'07-'24	Ind.20	169
170.	International Medical Missionary College, Atlanta	1904	1906	.....	1908	.....	....	....	C,'07-'08	Ga.17	170
171.	Iowa Coll. of Physicians and Surgeons, Des Moines[24]	1898	1903	.....	1903	166-172	....	....	.....	Ia.6	171
172.	Iowa Medical College, Eclectic, Des Moines	1881	1882	.....	1887	171	....	....	.....	Ia.6	172
173.	Iowa, State Univ. of, Coll. of Homeo. Med., Iowa City	1877	1878	1914	1919	.....	....	1910	A,'07-'10	Ia.4	173
174.	Iowa, State University of, Coll. of Medicine, Iowa City	1869	1871	.....	....	.....	....	1909	A,'07-'24	Ia.3	174
175.	Jefferson Medical College of Philadelphia	1825	1826	.....	....	.....	1914	1917	A,'07-'24	Pa.2	175
176.	Jenner Medical College, Chicago	1882	1898	.....	1918	.....	....	....	C,'07-'18	Ill.16	176
177.	John A. Creighton Medical College, Omaha, Neb.	1892	1892	.....	1922	94	1914	1919	A,'07-'11; B,'12-'16; A,'17-'22	Nebr.6	177
178.	Johns Hopkins University Medical Dept., Baltimore	1867	1897	.....	....	.....	....	1898	A,'07-'24	Md.7	178
179.	Joplin College of Physicians and Surgeons, Joplin, Mo.	1880	1891	.....	1884	.....	....	....	.....	Mo.17	179
180.	Kansas City College of Medicine and Surgery (Kan.)	1907	1908	.....	1908	230	....	....	.....	Kan.6	180
181.	Kansas City Coll. of Medicine and Surgery (Mo.)[25]	1913	1916	.....	....	.....	....	....	[25]	Mo.43	181
182.	Kansas City Hahnemann Medical College (Mo.)	1902	1903	.....	1915	329	....	....	C,'07-'09; B,'10-'11; C,'12-'15	Mo.35	182
183.	Kansas City Homeopathic Medical College (Mo.)	1885	1889	.....	1902	182	....	....	.....	Mo.36	183
184.	Kansas City Hospital College of Medicine (Mo.)	1882	1883	.....	1888	.....	....	....	.....	Mo.21	184
185.	Kansas City Medical College (Mo.)	1881	1881	.....	1905	76	....	....	.....	Mo.8	185
186.	Kansas City (Mo.) University of Phys. and Surgs.[26]	1919	1919	.....	....	.....	....	....	C,'18-'24	Mo.44	186
187.	Kansas Medical College, Independence	1872	1874	.....	1875	.....	....	....	.....	Kan.1	187
188.	Kansas Medical College, Topeka[26]	1890	1892	1901	1913	.....	....	....	B,'07-'13	Kan.3	188
189.	Kansas, University of, School of Medicine, Lawrence	1890	1906	.....	....	.....	....	1909	A,'07-'11; B,'12; A,'13-'24	Kan.2	189
190.	Kemper College Medical Department, St. Louis	1840	1841	.....	1845	385	....	....	.....	Mo.1	190
191.	Kentucky School of Medicine, Louisville	1850	1851	.....	1908	359	....	....	B,'07-'08	Ky.1	191
192.	Kentucky University Medical Department, Louisville	1838	1899	1907	1907	378	....	....	B,'07	Ky.9	192
193.	Keokuk Medical College, Keokuk, Iowa	1850	1891	.....	1899	194	....	....	.....	Ia.9	193
194.	Keokuk Med. Coll., Coll. of P. & S., Keokuk, Iowa	1899	1900	.....	1908	193	....	....	B,'07-'08	Ia.10	194
195.	King Eclectic Medical College, Des Moines	1902	1894	.....	1899	.....	....	....	.....	Ia.7	195
196.	King's College Medical Faculty, New York City	1769	1770	1770	1774	79-86-87	....	....	.....	N.Y.1	196
197.	Knoxville Coll. Med. Dept. (colored), Knoxville, Tenn.	1895	.....	.....	1900	198	....	....	.....	Tenn.13	197
198.	Knoxville Medical College (colored), Knoxville, Tenn.	1900	1900	1908,'07	1910	197	....	....	C,'07-'10	Tenn.13	198
199.	Laura Memorial Woman's Medical College, Cincinnati	1895	1896	.....	1903	308	....	....	.....	Ohio 21	199
200.	Leland Stanford Jr. Univ. Sch. of Med., San Francisco	1908	1913	.....	1922	92-342	....	1909	A,'08-'22	Cal.11	200
201.	Leonard Medical College, Raleigh, N. C.[27]	1882	1886	1887, 1915-'18	1918	.....	....	1914	C,'07-'09; B,'10-'11; C,'12-'13; B,'14-'18	N.C.3	201
202.	Lincoln Medical College, Eclectic, Lincoln, Neb.[28]	1890	1891	.....	1918	.....	....	....	C,'07-'16	Nebr.4	202
203.	Lincoln Memorial Univ. Med. Dept., Knoxville, Tenn.	1909	1910	.....	1917	353	....	....	B,'07-'09; C,'10-'14; B,'15-'17	Tenn.10	203
204.	Lind University, Medical Department of, Chicago	1850	1860	.....	1864	46-286	....	....	.....	Ill.6	204
205.	Long Island College Hospital, Brooklyn	1858	1860	.....	....	.....	1914	1918	A,'07-'11; B,'12-'14; A,'15-'24	N.Y.8	205
206.	Louisiana, Medical College of, New Orleans	1834	1835	.....	1847	207-361	....	....	.....	La.1	206
207.	Louisiana, University of, Medical Dept., New Orleans	1847	1848	1861-65	1884	206-361	....	....	.....	La.1	207
208.	Louisville and Hospital Medical College, Louisville	1907	1908	.....	1908	.....	....	....	B,'07-'08	Ky.11	208
209.	Louisville Medical College, Louisville	1869	1870	.....	1907	208	....	....	B,'07	Ky.4	209
210.	Louisville Medical Institute, Louisville	1837	1839	.....	1839	212-378	....	....	.....	Ky.2	210
211.	Louisville National Medical College, Louisville	1888	1889	.....	1912	.....	....	....	B,'07-'08; C,'09-'12	Ky.7	211
212.	Louisville, University of, Medical Dept., Louisville	1846	1847	1863	....	210	1914	1918	B,'07-'09; A,'10-'24	Ky.2	212
213.	Loyola University School of Medicine, Chicago	1915	1916	.....	....	23-24-43	1915	1918	B,'15-'19; A,'24	Ill.43	213
214.	Marion Sims-Beaumont Medical College, St. Louis	1901	1902	.....	1903	20-215-339	....	....	.....	Mo.34	214
215.	Marion Sims College of Medicine, St. Louis	1890	1891	.....	1901	214	....	....	.....	Mo.27	215
216.	Marquette University School of Medicine, Milwaukee	1912	1913	.....	....	247	1913	1915	B,'13-'14; A,'15-'24	Wis.6	216

* Offers only the first two years of the medical course.

† Reported fraudulent or not in good standing in the state in which the college is locate.

21. Was known as St. Louis College of Medical and Natural Sciences from 1855 to 1859; as Humboldt Institute from 1859 to 1866, and as Humboldt Medical College 1866 to 1869.

22. From 1844 to 1845 was known as the medical department of La Porte University.

23. In 1887 this college became the medical department of Drake University with the title the Iowa Medical College, Eclectic—also known as the Iowa Eclectic Medical College. Name changed to Drake University College of Medicine in 1903.

24. Kansas City College of Medicine and Surgery claims to be an eclectic medical college, but is reported not recognized as such by the National Eclectic Medical Association. It is an offshoot of the Eclectic Medical University, an institution which during its existence was rated in Class C. The new college has refused inspections and is reported not recognized by the licensing boards of forty-one states. There is nothing to indicate that a rating higher than Class C is deserved.

25. Chartered 1903 as the Central College of Osteopahy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and name was changed to the Central College Medical Department. Present title in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges.

26. This became the Medical Department of Washburn College in 1903.

27. This was the medical department of Shaw University. The last class graduated in 1914 when it discontinued clinical teaching. It was closed in 1918.

28. This was the medical department of Cotner University from 1911 to 1915 when the relationship was cancelled. Extinct in 1918.

Number	Name and Address	Organized or Name assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Merged With	For Subsequent or Previous Title see Line	Admission Requirements: One Year College	Admission Requirements: Two Years College	Classification by the Council on Medical Education	Key No. in American Medical Directory	Number
217.	Maryland Medical College, Baltimore	1839	1839	.....	1913	.....	....	....	B,'07-'09; C,'09-'13	Md 9	217
218.	Maryland, Univ. of, Sch. of Med. and Coll. of P. & S.	1812	1813	.....	....	.....	1914	1918	A,'07-'11; B,'12; A,'12-'24	Md.1	218
219.	Medical College of Alabama, Mobile	1859	1860	1862-68	1907	2-366	....	....	A,'07	Ala.2	219
220.	Medical College of Evansville (Ind.)	1849	1850	1854-71	1884	.....	....	....	.....	Ind.2	220
221.	Medical College of Fort Wayne (Ind.)	1876	1877	.....	1883	.....	....	....	.....	Ind.7	221
222.	Medical College of Georgia, Augusta	1829	1833	1862-63	1873	136-372	....	....	.....	Ga.1	222
223.	Medical College of Indiana, Indianapolis[29]	1879	1879	.....	1905	168-186	....	....	.....	Ind.8	223
224.	Medical College of Kansas City (Mo.)	1869	1870	.....	1873	.....	....	....	.....	Mo.11	224
225.	Medical College of Louisiana, New Orleans	1834	1835	.....	1847	207-381	....	....	.....	La.1	225
226.	Medical College of Ohio, Cincinnati[30]	1819	1821	.....	1909	52	....	....	A,'07-'09	Ohio 1	226
227.	Medical College of South Carolina, Charleston	1823	1825	.....	1838	229	....	....	.....	S.C.1	227
228.	Medical College of the Pacific, San Francisco	1873	1874	.....	1882	92-405	....	....	.....	Cal.1	228
229.	Med. Coll. of the State of South Carolina, Charleston[31]	1832	1833	1862-65	....	227	1914	1916	A,'07-'09; B,'10-'11; C,'12; B,'13-'15; A,'16-'24	S.C.1	229
230.	Medical College of Virginia, Richmond	1854	1855	.....	....	147-384	1914	1915	A,'07-'24	Va.4	230
231.	Medical Institution of Geneva, Geneva, N. Y.	1834	1835	1854	1861	131	....	....	.....	N.Y.4	231
232.	Medical Institution of Yale College, New Haven, Conn.	1813	1814	.....	1879	442	....	....	.....	Conn.1	232
233.	Medical School of Harvard University, Boston	1782	1788	.....	....	.....	1900	....	A,'07-'24	Mass.1	233
234.	Medical School of Maine, Brunswick-Portland	1820	1821	.....	1915	28	....	....	A,'07-'15	Me.1	234
235.	Medical School of the Valley of Virginia, Winchester	1838	....	.....	1861	.....	....	....	.....	Va.2	235
236.	Medico-Chirurgical College of Kansas City (Mo.)	1868	1869	.....	1905	180	....	....	.....	Mo.32	236
237.	Medico-Chirurgical College of Philadelphia	1851	1852	.....	1916	.....	1914	....	A,'07-'16	Pa.11	237
238.	Meharry Medical College (colored), Nashville[32]	1876	1877	.....	....	.....	1915	1918	B,'07-'09; A,'10-'12; B,'13-'22; A,'23-'24	Tenn.7	238
239.	Memphis Hospital Medical College	1880	1881	.....	1913	.....	....	....	B,'07-'13	Tenn.8	239
240.	Memphis Medical College	1857	1861-68	1861-68	1873	.....	....	....	.....	Tenn.2	240
241.	Miami Medical College, Cincinnati	1852	1853	1858-65	1909	52	....	....	A,'07-'09	Ohio 9	241
242.	Michigan College of Medicine, Detroit	1868	1881	.....	1885	104	....	....	.....	Mich.6	242
243.	Michigan College of Medicine and Surgery, Detroit	1868	1869	.....	1907	.....	....	....	C,'07	Mich.8	243
244.	Michigan, University of, Medical School, Ann Arbor	1850	1851	.....	....	.....	1909	....	A,'07-'24	Mich.1	244
245.	Michigan, Univ. of, Homeo. Med. School, Ann Arbor	1875	1877	.....	1922	.....	1912	1916	A,'07-'22	Mich.5	245
246.	Middlesex Coll. of Med. and Surg., Cambridge, Mass.[33]	1914	1915	.....	....	.....	....	....	C,'15-'24	Mass.15	246
247.	Milwaukee Medical College, Milwaukee	1894	1895	.....	1913	216	....	....	B,'07-'11; C,'12-'13	Wis.3	247
248.	Minneapolis College of Physicians and Surgeons[34]	1883	1884	.....	1911	.....	....	....	B,'07-'11	Minn.5	248
249.	Minnesota College Hospital, Minneapolis	1881	1882	.....	1885	250	....	....	.....	Minn.2	249
250.	Minnesota Hospital College, Minneapolis	1885	1886	.....	1888	249-252	....	....	.....	Minn.3	250
251.	Minnesota University of, Coll. of Homeo. Medicine	1888	1889	.....	1909	252	....	....	A,'07-'09	Minn.6	251
252.	Minnesota, University of, Med. School, Minneapolis[35]	1851	1868	.....	....	.....	....	1907	A,'07-'24	Minn.4	252
253.	Meridian Medical College, Meridian	1906	1907	.....	1912	.....	....	....	C,'07-'12	Miss.3	253
254.	Mississippi, University of, Sch. of Med., University[36]	1903	1910	[1910]	....	.....	1914	1918	A,'07-'24	Miss.1	254
255.	Missouri Medical College, St. Louis[37]	1855	1856	1862-65	1880	180-420	....	....	.....	Mo.1	255
256.	Missouri, University of, School of Medicine, Columbia	1840	1841	**	....	.....	1909	1910	A,'07-'24	Mo.2	256
257.	Montezuma Medical College, Montezuma	1906	1907	.....	1908	.....	....	....	.....	Ala.5	257
258.	Nashville Medical College	1876	1877	.....	1879	354	....	....	.....	Tenn.6	258
259.	Nashville, University of, Medical Department[38]	1850	1852	.....	1911	354	....	....	B,'07-'11	Tenn.1	259
260.	National Homeopathic Med. College, Washington, D. C.	1868	1894	.....	1896	419	....	....	.....	D.C.5	260
261.	National Homeopathic Medical College, Chicago	1911	1892	.....	1905	260	....	....	.....	Ill.14	261
262.	National Medical College, Chicago	1896	1896	.....	1900	261-263	....	....	.....	Ill.14	262
263.	National Medical University, Chicago	1900	1901	.....	1909	261-262	....	....	C,'07-'09	Ill.14	263
264.	National Normal Univ., Coll. of Med., Lebanon, Ohio	1889	1892	.....	1898	.....	....	....	.....	Ohio 22	264
265.	National University Medical Dept., Washington, D. C.	1884	1885	.....	1889	99	....	....	.....	D.C.4	265
266.	Natl. Univ. of Arts and Sciences, Med. Dept., St. Louis	1912	1913	.....	1918	6	....	....	C,'12-'18	Mo.10	266
267.	Nebraska College of Medicine, Lincoln	1907	1907	.....	1909	.....	....	....	C,'07-'09	Nebr.7	267
268.	Nebraska, Univ. of, Coll. of Med., Eclectic, Lincoln	1883	1884	.....	1885	.....	....	....	.....	Nebr.2	268
269.	Nebraska, Univ. of, Coll. of Med., Homeo., Lincoln	1883	1884	.....	1887	.....	....	....	.....	Nebr.3	269
270.	Nebraska, University of, College of Medicine, Omaha	1902	1905	.....	....	256	1908	1909	A,'07-'24	Nebr.5	270
271.	Nebraska, Univ. of, Coll. of Med., Regular, Lincoln	1883	1884	.....	1887	.....	....	....	.....	Nebr.1	271
272.	New England Female Med. Coll., Homeopathic, Boston	1848	1849	.....	1874	27	....	....	.....	Mass.3	272
273.	New Orleans School of Medicine, New Orleans	1858	....	.....	1859	.....	....	....	.....	La.2	273
274.	New Orleans University Medical College, New Orleans	1889	1892	1896	1901	123	....	....	.....	La.4	274
275.	New York Free Med. Coll. for Women, New York City	1871	1873	[1873-75]	1876	.....	....	....	.....	N.Y.35	275
276.	New York Homeo. Med. Coll and Flower Hospital	1859	1870	.....	....	154	1915	1919	A,'07-'14; B,'15-'24	N.Y.9	276
277.	New York Medical College, New York City	1860	1861	.....	1864	.....	....	....	.....	N.Y.7	277
278.	New York Medical College and Hosp. for Women	1863	1864	.....	1918	.....	1916	1918	B,'07-'11; C,'12-'18	N.Y.11	278
279.	New York University Medical College, New York City	1858	1867	.....	1898	363	....	....	.....	N.Y.5	279
280.	Niagara University Medical Department, Buffalo	1883	1886	.....	1898	30	....	....	.....	N.Y.18	280
281.	North Carolina Medical College, Charlotte	1859	1860	.....	1918	.....	....	....	B,'07; C,'08-'14; B,'15-'18	N.C.4	281
282.	North Carolina, Univ. of, School of Med., Chapel Hill[39]	1879	1903	[1903-1909]	....	.....	1910	1917	A,'07-'24	N.C.1	282

* Offers only the first two years of the medical course.

29. This was the medical department of Butler University from 1879-1883 and of the University of Indianapolis from 1895 to 1905.

30. Became the medical department of the University of Cincinnati in 1896 but retained its former name till 1909 when it merged with the Miami Medical College to form the Ohio-Miami Medical College of the University of Cincinnati.

31. This institution and the Medical College of South Carolina were conducted as separate institutions from 1832 to 1838 when they were merged.

32. This was the medical department of Central Tennessee College which in 1900 became Walden University. The relationship was canceled in 1916.

33. The Middlesex College of Medicine and Surgery is a nondescript institution which for several years has occupied the same building with the Massachusetts College of Osteopathy and, on inspection, the two were found to be almost indistinguishable. It has granted liberal advanced standing for courses taken in osteopathic institutions. It secured the old uncanceled charter of the Worcester Medical College of Boston, otherwise, it could hardly have obtained a charter under the strict laws now regulating the chartering of educational institutions in Massachusetts. Its predecessor was an eclectic, botanico-medical affair chartered in 1848 which had a rather precarious existence. It underwent a reorganization in 1852; moved to Boston in 1857; returned to Worcester in 1859, and became extinct in 1859. The new medical school has affiliated itself with schools of dentistry, pharmacy, chiropody, optometry, etc., under the high sounding title of the "University of Massachusetts." According to report, the latter has not secured authority from the state to grant degrees in arts or sciences and its name has not been found on the list of colleges or universities approved by any recognized standardizing agency. The medical school is rated in Class C, and is reported as not recognized by the medical licensing boards of thirty-six states.

34. Degrees from 1884 to 1887 inclusive were granted by the University of Minnesota. It was the medical department of Hamline University from 1895 to 1911. It ceased to conduct classes in 1908 and the three remaining classes completed their instruction in the University of Minnesota Medical School with which it was merged, but Hamline University granted the degrees.

35. Was an examining body only until 1888 when it absorbed the consolidation of the Saint Paul Medical College and the Minneapolis Hospital College.

36. Offers only first two years of the medical course. Taught clinical courses at Vicksburg during the session of 1909-10 and in 1910 graduated its one class. Clinical teaching was then abandoned.

37. Sometimes known as the McDowell Medical College.

38. No classes were graduated in 1857, 1858, 1860 to 1873 inclusive, 1887 to 1890 inclusive, 1892 and 1902. From 1845 to 1855 was located in St. Louis. Reorganized at Columbia in 1872. Last class was graduated in 1909 when clinical teaching was discontinued.

39. The University of Nashville Medical Department and Vanderbilt University Medical Department united in 1874, each school granting degrees each year to a portion of the class. Relationship dissolved in 1895. Similar union with the University of Tennessee Medical Department 1909 to 1911.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: One Year College	Admission Requirements: Two Years College	Classification by the Council on Medical Education	Key No. in American Medical Directory	Number
283.	**North Dakota, Univ. of, School of Med., University[a].**	1905	....	.....	....	.....	....	1907	A,'07-'24	N.D.1	283
284.	Northwestern Medical College, St. Joseph, Mo.	1879	1881	.....	1894	.....	....	....	.....	Mo.18	284
285.	Northwestern Ohio Medical College, Toledo	1883	1884	.....	1891	.....	....	....	.....	Ohio 18	285
286.	**Northwestern University Medical School, Chicago**	1891	1891	.....	....	46-204	1908	1911	A,'07-'24	Ill.6	286
287.	Northwestern Univ. Woman's Med. School, Chicago	1892	1892	.....	1902	422-434	....	....	.....	Ill.9	287
288.	**Oakland College of Med. and Surg., Oakland, Calif.**	1909	1909	.....	1910	.....	1915	....	A,'07-'09; B,'10-'17; C,'15-'20	Cal.8	288
289.	Oglethorpe Medical College, Savannah, Ga.	1856	....	.....	1861	.....	....	....	.....	Ga.6	289
290.	Ohio Medical University, Columbus	1890	1893	.....	1907	344	....	....	A,'07	Ohio 25	290
291.	Ohio-Miami Medical College, Cincinnati	1909	1910	.....	1911	52	....	....	A,'09-'11	Ohio 41	291
292.	Ohio State Univ. Coll. of Homeo. Med., Columbus	1914	1915	.....	1922	57-256	1915	1916	C,'14-'16; B,'17-'22	Ohio 42	292
293.	**Ohio State University College of Medicine, Columbus**	1914	1915	.....	....	344	1914	1915	A,'14-'24	Ohio 40	293
294.	Oklahoma Medical College, Oklahoma City	1907	....	.....	1909	.....	....	....	C,'07-'09	Okla.4	294
295.	**Oklahoma, Univ. of, School of Med., Oklahoma City[w]**	1909	1911	.....	....	.....	1914	1917	A,'07-'11; B,'12-'19; A,'24	Okla.1	295
296.	Omaha Medical College, Omaha, Neb.[x]	1881	1882	.....	1902	270	....	....	.....	Nebr.5	296
297.	**Oregon, University of, Medical School, Portland**	1887	1888	1888	....	.....	1910	1915	A,'07-'24	Ore.2	297
298.	Penn. Medical University, Philadelphia	1855	....	1867-74	1881	.....	....	....	.....	Pa.8	298
299.	Pennsylvania Medical College, Philadelphia	1839	....	.....	1861	.....	....	....	.....	Pa.3	299
300.	**Pennsylvania, Univ. of, School of Med., Philadelphia**	1791	1792	.....	....	65	1909	1910	A,'07-'24	Pa.1	300
301.	Philadelphia College of Medicine and Surgery	1846	....	.....	1859	290	....	....	.....	Pa.4	301
302.	Philadelphia University of Medicine and Surgery[w]	1895	....	.....	1899	5	....	....	.....	Pa.14	302
303.	Physio-Medical College, Cincinnati	1839	1837	.....	1850	.....	....	....	.....	Ohio 4	303
304.	Physio-Medical College of Indiana, Indianapolis	1873	1874	.....	1909	.....	....	....	C,'07-'09	Ind.5	304
305.	Physio-Medical College of Texas, Dallas	1909	1902	.....	1908	.....	....	....	C,'07-'08	Tex.5	305
306.	Physio-Medical Institute, Cincinnati	1850	....	.....	1885	.....	....	....	.....	Ohio 10	306
307.	**Pittsburgh, University of, School of Medicine**	1908	1909	.....	....	425	1911	1913	B,'07-'09; A,'10-'24	Va.12	307
308.	Presbyterian Hosp. and Woman's M. Coll., Cincinnati	1909	1892	.....	1895	199	....	....	.....	Ohio 24	308
309.	Pulte Medical College, Cincinnati	1872	1873	.....	1910	52	....	....	B,'07-'09; C,'10	Ohio 12	309
310.	Quincy College of Medicine, Quincy, Ill.	1882	1883	.....	1888	38	....	....	.....	Ill.12	310
311.	Randolph Macon College Medical Department, Prince Edward Court House, Va.	1840	....	.....	1855	.....	....	....	.....	Va.5	311
312.	Reform Medical College of Georgia, Macon	1854	1855	1861-67	1874	60-323	....	....	.....	Ga.2	312
313.	Reliance Medical College, Chicago	1907	1909	.....	1911	.....	....	....	C,'07-'11	Ill.39	313
314.	**Rush Medical College, Chicago**	1843	1844	.....	....	.....	1902	1904	A,'07-'24	Ill.1	314
315.	Saginaw Valley Medical College, Saginaw, Mich.	1886	1897	.....	1903	243	....	....	.....	Mich.9	315
316.	Savannah Medical College, Savannah, Ga.	1853	1854	1862-68, 1876-80	1880	.....	....	....	.....	Ga.4	316
317.	Sewanee Medical College, Sewanee, Tenn.	1892	1896	.....	1909	406	....	....	C,'07-'09	Tenn.11	317
318.	Shelby Medical College, Nashville	1858	....	.....	1862	.....	....	....	.....	Tenn.4	318
319.	Sioux City College of Medicine, Sioux City, Iowa	1890	1893	.....	1909	.....	....	....	B,'07-'08; C,'09	Ia.8	319
320.	**South Carolina, Med. Coll. of the State of, Charleston[u]**	1832	1833	1862-65	....	226-228	1914	1916	A,'07-'09; B,'10-'11; C,'12; B,'13-'15; A,'16-'24	S.C.1	320
321.	South Carolina, University of, Med., Dept., Charleston	1866	....	.....	1876	.....	....	....	.....	S.C.2	321
322.	**South Dakota, Univ. of, Coll. of Med., Vermillion[a]**	1907	....	.....	....	.....	1908	1909	A,'07-'24	S.D.1	322
323.	Southern Botanico-Medical College, Macon, Ga.	1839	1841	.....	1854	312-60	....	....	.....	Ga.2	323
324.	Southern College of Medicine and Surgery, Atlanta[m]	1911	1912	.....	1914	.....	....	....	C,'13-'14	Ga.10	324
325.	Southern Homeopathic Medical College, Baltimore	1890	1892	.....	1907	14	....	....	B,'07	Md.8	325
326.	Southern Medical College, Atlanta	1879	1880	.....	1908	11	....	....	.....	Ga.10	326
327.	**Southern Methodist Univ. Med. Dept., Dallas, Tex.**	1911	1913	.....	1915	231	1914	....	B,'11; C,'12-'13; B,'14-'15	Tex.6	327
328.	Southern University Medical Depart., Greensboro, Ala.	1873	....	.....	1880	.....	....	....	.....	Ala.3	328
329.	Southwest Sch. of Med. and Hosp., Kansas City, Mo.	1915	1916	.....	1916	182	....	....	C,'15-'16	Mo.35	329
330.	Southwestern Homeo. Med. Coll. and Hosp., Louisville	1858	1860	.....	1860	.....	....	....	C,'07-'10	Ky.5	330
331.	Southwestern University Medical College, Dallas, Tex.	1903	1904	.....	1911	327	....	....	B,'07-'11	Tex.6	331
332.	St. Joseph Hospital Medical College, St. Joseph, Mo.	1870	1878	.....	1882	333	....	....	.....	Mo.14	332
333.	St. Joseph Medical College, St. Joseph, Mo.	1882	1883	.....	1888	121	....	....	.....	Mo.22	333
334.	St. Louis Coll. of Med. and Natural Sciences, St. Louis	1855	....	.....	1859	160	....	....	.....	Mo.4	334
335.	**St. Louis Coll. of Physicians and Surgeons, St. Louis**	1879	1880	1916	....	78	....	....	B,'07-'08; C,'09-'24	Mo.7	335
336.	St. Louis Hahnemann Medical College, St. Louis[n]	1873	1874	.....	1874	.....	....	....	.....	Mo.12	336
337.	St. Louis Medical College, St. Louis[o]	1855	1856	.....	1891	358-420	....	....	.....	Mo.2	337
338.	St. Louis University Medical Department, St. Louis	1842	1843	.....	1856	337	....	....	.....	Mo.3	338
339.	**St. Louis University School of Medicine, St. Louis**	1903	1904	.....	....	214	1910	1918	A,'07-'24	Mo.34	339
340.	St. Louis Woman's Medical College, St. Louis	1894	1895	.....	1896	.....	....	....	.....	Mo.37	340
341.	St. Paul Medical College, St. Paul[w]	1885	1886	.....	1889	383	....	....	.....	Minn.2	341
342.	**Stanford University School of Medicine, San Francisco**	1908	1913	.....	....	92-200	....	1909	A,'08-'24	Cal.11	342
343.	Starling Medical College, Columbus, Ohio	1847	1847	.....	1907	344	....	....	A,'07	Ohio 3	343
344.	Starling-Ohio Medical College, Columbus, Ohio	1907	1908	.....	1914	256	....	....	A,'07-'14	Ohio 40	344
345.	State Coll. of Physicians and Surgeons, Indianapolis[v]	1906	1907	.....	1907	169	....	....	A,'07	Ind.21	345
346.	State Univ. of Iowa Coll. of Homeo. Med., Iowa City	1877	1878	1914	1919	.....	....	1910	A,'07-'19	Ia.4	346
347.	**State University of Iowa College of Med., Iowa City**	1869	1871	.....	....	.....	1909	1910	A,'07-'24	Ia.1	347
348.	State University Medical Dept. (reclore[q]), Louisville	1846	....	.....	1902	211	....	....	.....	Ky.10	348
349.	**Syracuse University College of Med., Syracuse, N. Y.**	1875	1876	.....	....	350	1909	1910	A,'07-'24	N.Y.15	349
350.	Syracuse Univ. Coll of F. and S., Syracuse, N. Y.	1872	1873	.....	1875	131-347	....	....	.....	N.Y.15	350
351.	Tallahassee Coll. of Med. and Surg., Jacksonville, Fla.	1883	1884	[1884]	1886	.....	....	....	.....	Fla.1	351
352.	**Temple University, Department of Med., Philadelphia**	1901	1904	.....	....	.....	1914	1918	C,'07-'09; B,'10-'24	Pa.13	352
353.	Tennessee Medical College, Knoxville	1889	1890	.....	1909	208	....	....	B,'07-'09	Tenn.10	353
354.	**Tennessee, University of, College of Med., Memphis**	1879	1880	.....	....	256	1914	1918	B,'07-'11; C,'12; B,'13; A,'14-'24	Tenn.6	354
355.	Texas Medical College and Hospital, Galveston	1873	1874	[1874-81, '90, '91]	1891	128	....	....	.....	Tex.1	355
356.	**Texas, University of, Department of Med., Galveston**	1891	1892	.....	....	.....	1910	1917	A,'07-'24	Tex.2	356
357.	Toland Medical College, San Francisco	1863	1864	.....	1873	35-309	....	....	.....	Cal.12	357
358.	Toledo Medical College, Toledo, Ohio	1883	1883	.....	1914	.....	....	....	B,'07-'11; C,'12-'14	Ohio 19	358
359.	Transylvania University Med. Dept., Lexington, Ky.	1817	1817	.....	1850	191	....	....	.....	Ky.1	359

* Offers only the first two years of the medical course.

40. Taught only the subjects of the first two years of the medical course from 1910 when the clinical department was established.

41. From 1891 to 1902 this was the medical department of Omaha University.

42. In the last few years of its existence this college is reported to have been fraudulent.

43 The charter of this institution passed into the hands of individuals who sold, or offered for sale, its diplomas for a year or two after the college had ceased to exist. Most of such diplomas which were discovered were dated as of 1914.

44. Graduated one class of four students.

45. Known sometimes as "Pope's Medical College."

46. Was conducted as a preparatory school from 1871 to 1879.

47. Taught work of third and fourth years of the medical course supplementary to the two year course given by the Indiana University School of Medicine with which it was affiliated.

Number	Name and Address	Organized or Name Assumed	First Graduated	Years when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: One Year College	Admission Requirements: Two Years College	Classification by the Council on Medical Education	Key No. in American Medical Directory	Number
360.	**Tufts College Medical School**, Boston	1893	1894	.....	....	.....	1914	1918	A,'07-'24	Mass.7	360
361.	**Tulane Univ. of Louisiana Sch. of Med.**, New Orleans	1884	1885	.....	....	206-207	1910	1918	A,'07-'24	La.1	361
362.	United States Medical College, New York City	1578	1881	[1881-82]	1884	.....	.....	.....	.....	N.Y.16	362
363.	University and Bellevue Hosp. Med. Coll., N. Y. City	1898	1899	.....	....	22-279	1912	1918	A,'07-'20	N.Y.19	363
364.	University College of Medicine, Richmond, Va.[48]	1893	1894	.....	1913	220	....	....	A,'07-'13	Va.6	364
365.	University Medical College, Kansas City, Mo.	1888	1889	.....	1913	377	1910	....	A,'07-'13	Mo.39	365
366.	**University of Alabama School of Medicine**, Mobile	1907	1908	.....	....	219	1914	1915	A,'07-'24	Ala.2	366
367.	**University of Arkansas Medical Dept.**, Little Rock	1879	1900	.....	....	9	1915	1918	B,'07-'18; A,'24	Ark.1	367
368.	**University of Buffalo Dept. of Medicine**, Buffalo, N. Y.	1846	1847	.....	....	.....	1914	1918	A, '07-'24	N.Y.6	368
369.	**University of California Med. School**, San Francisco	1872	1873	.....	....	357	....	1905	A,'07-'24	Cal.2	369
370.	**University of Cincinnati College of Med.**, Cincinnati	1911	1912	.....	....	226-291	1910	1913	A,'11-'24	Ohio 41	370
371.	**University of Colorado School of Medicine**, Denver	1907	1908	.....	....	84	....	1910	A,'07-'24	Colo.2	371
372.	University of Dallas Medical Department, Dallas, Tex.	1900	1901	.....	1903	18	....	....	.....	Tex.4	372
373.	**University of Georgia Medical Department**, Augusta	1873	1874	.....	....	222	1914	1918	A,'07-'09; B,'10-'12; A,'13-'24	Ga.1	373
374.	**University of Illinois College of Medicine**, Chicago	1911	1912	.....	....	69	1913	1914	A,'11-'24	Ill.11	374
375.	University (State) of Iowa Medical Dept., Keokuk	1854	1855	.....	1870	72-347	....	....	.....	Ia.1	375
376.	**University of Kansas School of Medicine**, Lawrence	1889	1906	.....	....	.....	....	1909	A,'07-'11; B,'12; A,'13-'24	Kan.2	376
377.	University of Kansas City Medical Dept. (Mo.)	1881	1892	.....	1888	365	....	....	.....	Mo.39	377
378.	**University of Louisville Medical Dept.**, Louisville	1846	1847	1863	....	210	1914	1918	B,'07-'09; A,'10-'24	Ky.2	378
379.	**Univ. of Maryland Sch. of Med. & Coll. of P. & S.**	1812	1813	.....	....	64	1914	1918	A,'07-'11; B,'12; A,'13-'24	Md.1	379
380.	University of Michigan Homeo. Med. Sch., Ann Arbor	1875	1877	.....	1922	.....	1912	1916	A,'07-'22	Mich.5	380
381.	**University of Michigan Medical School**, Ann Arbor	1850	1851	.....	....	.....	....	1909	A,'07-'24	Mich.1	381
382.	Univ. of Minnesota Coll. of Homeo. Med., Minneapolis	1888	1889	.....	1909	252	....	....	A,'07-'09	Minn.6	382
383.	**University of Minnesota Med. School**, Minneapolis[49]	1883	1889	.....	....	.....	....	1907	A,'07-'24	Minn.4	383
384.	**University of Mississippi School of Med.**, University[49]	1903	1910	[1910]	....	.....	1914	1918	A,'07-'24	Miss.1	384
385.	**University of Missouri School of Medicine**, Columbia[49]	1845	1846	24	....	.....	1908	1910	A,'07-'24	Mo.3	385
386.	University of Nashville Med. Dept., Nashville, Tenn.[49]	1850	1851	.....	1911	374	....	....	B,'07-'11	Tenn.1	386
387.	**University of Nebraska College of Medicine**, Omaha	1902	1903	.....	....	296	1908	1909	A,'07-'24	Nebr.5	387
388.	Univ. of Neb. Coll of Med., Eclectic Dept., Lincoln	1883	1884	.....	1885	.....	....	....	.....	Nebr.2	388
389.	Univ. of Neb. Coll of Med., Homeo. Dept., Lincoln	1883	1884	.....	1887	.....	....	....	.....	Nebr.3	389
390.	Univ. of Neb. Coll. of Med., Regular Dept., Lincoln	1870	1884	.....	1887	.....	....	....	.....	Nebr.1	390
391.	**Univ. of North Carolina School of Med.**, Chapel Hill[49]	1879	1903	[1903-09]	....	.....	1910	1917	A,'07-'24	N.C.1	391
392.	**Univ. of North Dakota School of Medicine**, University[49]	1905	....	.....	....	.....	....	1907	A,'07-'24	N.D.1	392
393.	**Univ. of Oklahoma School of Med.**, Oklahoma City[49]	1900	1911	.....	....	.....	....	1914	1917	A,'07-'11; B,'12-'19; A,'20-'24	Okla.1	393
394.	**University of Oregon Medical School**, Portland	1887	1888	1898	....	.....	1910	1915	A,'07-'24	Ore.2	394
395.	**University of Penn. School of Med.**, Philadelphia	1791	1792	.....	....	65	1909	1910	A,'07-'24	Pa.1	395
396.	**University Pittsburgh School of Medicine**	1908	1909	.....	....	425	1911	1913	B,'07-'09; A,'10-'24	Pa.12	396
397.	**University of Rochester School of Medicine**	1923	....	.....	....	.....	....	1923	.....	N.Y.45	397
398.	University of South Carolina Med. Dept., Charleston	1866	....	.....	1876	.....	....	....	.....	S.C.2	398
399.	**University of South Dakota Coll. of Med.**, Vermillion[49]	1907	....	.....	....	.....	1908	1909	A,'07-'24	S.D.1	399
400.	University of So. Calif. Coll. of Med., Los Angeles	1885	1888	.....	1909	33	....	....	A,'07-'09	Cal.6	400
401.	Univ. of So. Calif. Coll. of P. & S., Los Angeles[49]	1903	1905	.....	1909	67	1914	1916	B,'07-'20	Cal.9	401
402.	**University of Tennessee College of Med.**, Memphis[49]	1879	1880	.....	....	258	1914	1918	B,'07-'11; C,'12; B,'13; A,'14-'24	Tenn.6	402
403.	**University of Texas Department of Med.**, Galveston	1891	1892	.....	....	.....	1910	1917	A,'07-'24	Tex.2	403
404.	University of the City of New York Medical Dept.	1841	1842	.....	1866	279	....	....	.....	N.Y.5	404
405.	University of the Pacific Med. Dept., San Francisco	1858	1860	1865-69	1873	228	....	....	.....	Cal.1	405
406.	University of the South Med. Dept., Sewanee, Tenn.	1892	1895	.....	1909	317	....	....	C,'07-'09	Tenn.11	406
407.	**University of Utah School of Med.**, Salt Lake City[49]	1906	1907	.....	....	.....	1909	1910	A,'07-'24	Utah 1	407
408.	**University of Vermont College of Medicine**, Burlington	1822	1823	1856-58	....	.....	1912	1918	A,'07-'24	Vt.5	408
409.	**University of Virginia Dept. of Med.**, Charlottesville	1827	1828	1865	....	.....	1910	1917	A,'07-'24	Va.1	409
410.	Univ. of West Tenn. Coll. of Med. and Surg., Memphis	1900	1904	.....	1923	.....	....	....	C,'07-'23	Tenn.14	410
411.	**University of Wisconsin Medical School**, Madison[49]	1907	....	.....	....	.....	....	1907	A,'07-'24	Wis.5	411
412.	University of Wooster Medical Department, Cleveland	1849	1869	.....	1896	39-436	....	....	.....	O.11,12	412
413.	Valparaiso University Med. Dept., Valparaiso, Ind.[49]	1907	....	.....	1918	.....	1915	....	B,'09-'18	Ill.22	413
414.	**Vanderbilt University Medical Department**, Nashville	1874	1875	.....	....	.....	1914	1918	A,'07-'24	Tenn.5	414
415.	Vermont Medical College, Woodstock	1835	....	.....	1856	89	....	....	.....	Vt.3	415
416.	Vermont Academy of Medicine, Castleton, Vt.	1821	....	.....	1838	34-35	....	....	.....	Vt.1	416
417.	**Wake Forest Coll. School of Med.**, Wake Forest, N. C.[2]	1902	....	.....	....	.....	....	1908	A,'07-'24	N.C.5	417
418.	Washington College Medical Department, Baltimore	1827	1828	.....	1840	421	....	....	.....	Md.2	418
419.	Washington Homeo. Med. Coll., Washington, D. C.	1898	1899	.....	1898	269	....	....	.....	D.C.5	419
420.	**Washington University Medical School**, St. Louis	1891	1892	.....	....	338-337	1910	1912	A,'07-'24	Mo.3	420
421.	Washington University School of Medicine, Baltimore	1840	1841	1851-1867	1877	418	....	....	.....	Md.3	421
422.	Western College of Homeopathic Medicine, Cleveland	1849	1851	.....	1857	423-151-58	....	....	.....	Ohio 7	422
423.	Western Eclectic Coll. of M. & S., Kansas City, Kan.	1906	1908	.....	1909	117-118	....	....	C,'08-'09	Kan.7	423
424.	Western Homeopathic College, Cleveland	1857	1858	.....	1870	421-151-58	....	....	.....	Ohio 7	424
425.	Western Pennsylvania Medical College, Pittsburgh	1886	1887	.....	1908	206	....	....	B,'07-'08	Pa.12	425
426.	**Western Reserve University School of Med.**, Cleveland	1843	1847	.....	....	40-412	....	1901	A,'07-'24	Ohio 6	426
427.	Westminster University College of Medicine, Denver	1907	1908	.....	1908	102-103	....	....	C,'07-'08	Colo.4	427
428.	**West Virginia University School of Med.**, Morgantown[2]	1902	....	.....	....	.....	....	1911	A,'07-'11; B,'12-'16; A,'17-'24	W.Va.1	428
429.	Willamette University Med. Dept., Salem, Ore.	1865	1867	1896	1913	.....	....	....	B,'07-'08; C,'09-'13	Ore.1	429
430.	Willoughby University Med. Dept., Willoughby, Ohio	1835	....	.....	1847	.....	....	....	.....	Ohio 28	430
431.	Wisconsin College of Phys. and Surgs., Milwaukee	1886	1894	.....	1913	216	....	....	B,'07-'11; C,'12-'13	Wis.3	431
432.	**Wisconsin, University of, Medical School**, Madison[49]	1907	....	.....	....	.....	....	1907	A,'07-'24	Wis.5	432
433.	Woman's Hospital Medical College, Chicago	1870	1871	1872	1879	434-287	....	....	.....	Ill.9	433
434.	Woman's Medical College, Chicago	1879	1880	.....	1892	433-287	....	....	.....	Ill.9	434
435.	Woman's Medical College of Baltimore	1882	1883	1898	1910	.....	....	....	B,'07-'10	Md.5	435
436.	Woman's Medical College of Cincinnati	1887	1888	.....	1895	199	....	....	.....	Ohio 39	436
437.	Woman's Medical College, Kansas City, Mo.	1895	1896	.....	1908	.....	....	....	.....	Mo.39	437
438.	**Woman's Medical Coll. of Pennsylvania**, Philadelphia	1850	1852	1862	....	.....	1914	1915	A,'07-'24	Pa.7	438
439.	Woman's Medical College of the New York Infirmary for Women and Children, New York City	1868	1870	.....	1899	.....	....	....	.....	N.Y.14	439
440.	Woman's Med. Coll. of Northwestern Univ., Chicago	1892	1893	.....	1902	433-434	....	....	.....	Ill.9	440
441.	Worthington Med. Coll., Eclectic, Worthington, Ohio	1833	1833	1839-45	1845	116-114	....	....	.....	Ohio 2	441
442.	Yale College, Med. Institution of, New Haven, Conn.	1813	1814	.....	1879	443	....	....	.....	Conn.1	442
443.	**Yale University School of Med.**, New Haven, Conn.	1879	1880	.....	....	442	....	1909	A,'07-'24	Conn.1	443

* Offers only the first two years of the medical course.

48. This school was organized as the College of Physicians and Surgeons but before a year had passed assumed the title, University College of Medicine.

49. Taught only the first two years of the medical course operating under the charter of the Chicago College of Medicine and Surgery.

Special Article

CAN THE POOR BOY SECURE A MEDICAL EDUCATION?

N. P. COLWELL, M.D.
Secretary of the Council on Medical Education and Hospitals of the American Medical Association
CHICAGO

In order to obtain the facts regarding the opportunities for students of limited means to obtain a medical education, correspondence has been conducted with the presidents of fifty prominent universities. The inquiry included the possibilities of obtaining the essential premedical college work as well as the work in the medical school.

PREMEDICAL COLLEGE WORK

The replies in regard to securing the premedical college training showed that the opportunities were even more numerous than was anticipated. From the universities which had kept fair records in regard to students' self help, we learn that from 50 to 65 per cent. of the student body are working for at least a part of their expenses, and that between 15 and 20 per cent. are making their entire way through college. Some of these were granted scholarships which covered all or part of their tuition fees, but in no instance covered other essential expenses. The president of a midwestern university says that "thousands of students are still successfully working their way through college." Another writes, "One thousand applications for work have been filed in this office, and an equal number have found employment without coming here."

The director of student appointments in a prominent Eastern university says that "any properly prepared student of the right type, character and personality can work his way to a collegiate degree, in spite of any financial handicaps with which he may be encumbered. There are many cases every year of men who make splendid records here after having worked their way wholly, and a very large proportion of our students, 35 to 40 per cent., are self-supporting to at least some substantial degree." In the university just referred to, during 1922, about 1,200 students who worked for all or part of their expenses earned altogether during the year more than $170,000.

MEDICAL COLLEGE WORK

When it comes to the medical training, the situation is more difficult. A student attending a first class medical school today has less time for outside work because the medical curriculum requires most of the time and energy at his command. Unless the student can secure work directly related to his medical instruction, it might interfere seriously with his medical training. It is advisable, therefore, for medical students who can arrange to do so to borrow sufficient money to enable them to meet at least half of their expenses, and to devote as much time as possible to medical work. It would be better to have financial indebtedness on graduation than to have lost the one best opportunity, during the medical course, of securing a larger amount of experience and skill.

The dean of a large medical school writes: "The energetic young man of good intelligence and moderate means can make his way through the medical school provided he can secure $400 to $500 a year, but those who are entirely destitute must naturally expect great difficulty in finishing their work satisfactorily." Some medical schools will accept a student's note for the last one or two years of the medical course, if he has shown unusual ability in his earlier years.

Even today, however, many students, and especially those of exceptional skill in certain lines, are earning all or most of their way through medical school. Some extend their studies over an additional year in order to allow sufficient time for outside work.

MEANS OF SUPPORT

The opportunities whereby students of limited means can secure employment both in college and in medical school are of an endless variety. Universities are organizing the various services to the entire student body in such manner that those services are rendered by the students who are earning their way. Such services, for example, are student laundry work; suit pressing; newspaper bureaus; transfer agencies; travel bureaus; tutoring; typewriting; student publications; university printing, and picture agencies. Many students wait on table, wash dishes, take care of furnaces, clean walks, cut grass, wash windows, work in stores or factories, work at stenography, bookkeeping, carpentering, nursing, ditch-digging and farming, act as caretakers of clubs, as magazine agents, as chauffeurs, as fillers at gasoline stations, and do other odd jobs.

The dean of an Eastern medical school writes that many students earn considerable money during the summer months; that one student made $1,800 as a Chautauqua lecturer; a third works during the summer as a union carpenter, and "makes enough money to support himself throughout the year." These students paid all their expenses and did not ask for scholarships. Another student worked as head waiter in a summer hotel; another, as an assistant in the department of chemistry; another did bacteriologic and serologic work after school hours in a hospital laboratory. Several others earned about $200 apiece as counselors, or as medical assistants in summer camps for boys or girls. Others work as clerks in drug stores, groceries and post offices. A large number of students play in orchestras during the summer months, and on Saturday and Sunday nights during the winter. Most of the girl students teach in summer, and do tutoring in their spare time during the winter. One student obtained his board and lodging by acting as an ambulance attendant at night in a nearby hospital. One student acted as a grocery clerk, and also earned considerable money by mimeographing lectures given in the medical school for distribution to other students. Another student was superintendent of a floating hospital during the summer; another worked twenty-two hours a week in a drug store during his freshman year, but in the following years cut the time in half on account of the greater severity of his studies.

Indeed, the range of activities in which self-helping students are engaged is wide. While the majority do not make enough to pay all their board, lodging and incidentals, they obtain enough, with the financial help that they receive from home, to enable them to make their way. The summer earnings of the students in one of the large medical schools range, on the average, from $200 to $300, although a few make $400 to $500, and a very few even more than this. A student who has a neat personal appearance, an intelligent bearing, a spirit of perseverance, and a pleasing personality will seldom have difficulty in securing opportunities for self help.

GREATER VALUE RECEIVED

It is true that the modern training in medicine requires a longer period of study beyond the high school than was considered necessary twenty years ago. All medical schools now require two or more years of college work for admission; but an increasing number of students prefer to secure a baccalaureate degree before entering on the study of medicine, and many are working to pay their expenses while doing so. In this connection, the chancellor of a prominent Southern university says: "A poor boy can still get a medical education, provided he is willing to work for it. He will have to work in the summer and may have to borrow, but society is now spending more on the boy being trained for a physician than it has ever spent on any class of students in the history of the world. If the students are compelled to give more, they are getting more than any one ever before received."

One university president issued a warning against certain employments, and states that the results for those who have worked as ushers or check boys in theaters, dance halls and hotels "were almost invariably unhappy." He says also that the student "must be warned against undertaking too much for fear that he will not get out of his college work sufficient return to warrant the great sacrifice he is making."

THE STANDING OF SELF-SUPPORTING STUDENTS

The letters received were almost unanimous in regard to the importance of providing opportunities for deserving students of limited means. One letter states: "I am a very strong believer in the value to the community and to the educational institutions of self-supporting students. Such students often set the pace, and experience has conclusively indicated the value to civilization of investments in men and women of such caliber."

The student who is working to make his way seldom has to forego social activities or cultural advantages in his college life. In fact, such students are found among those of higher grade; among the officers of college organizations, and they frequently secure membership in scholarship fraternities. Almost invariably they are looked on with respect by their fellow students.

ADVANTAGE TO STUDENTS

Students who work their way through educational institutions have certain advantages over those whose entire way is paid. The ambition indicated by their efforts to help themselves attracts the attention of officials and teachers of the institution so that, after a student has once shown what he can do, he will frequently be directed to opportunities for self-support. The fact also that students are self-supporting gives them an advantage after graduation, because their ability in various lines has already been demonstrated. It is stated that employers seeking members of graduating classes for business positions offering large opportunities frequently show a marked preference to men who have earned at least an essential part of their expenses and who have, therefore, secured valuable practical business experience along with their training.

SCHOLARSHIPS

Along with the many improvements in medical schools which have greatly increased the cost of furnishing a medical education, there has also been established a greatly increased number of scholarships for deserving students of limited means. There are now about 550 such scholarships in forty-six of the leading medical schools, the number in each institution ranging from one to eighty-four. In most instances they cover only the cost of tuition.

STATEMENTS BY INDIVIDUAL STUDENTS

The attitude of the students themselves, from a score of whom statements have been received, is one which should be encouraging to other students who must work their way if they are to obtain the desired education. Excerpts from the letters of several students are as follows:

A: "It can be done if a fellow really wants to see it through."

B: "If a healthy young man really desires to study medicine and possesses an average amount of intelligence, he can accomplish this by foregoing certain semiessentials, an extended social life, good clothes and expensive food."

C: "Perhaps the greatest stimulus to a fellow who is working his way is the democratic spirit and sympathetic attitude of other students."

D: "The most important point is that the problem grows easier each year, the strain grows less, and worrying does not come so readily."

E: "I graduated. It was a grand day in my life. It marked the close of four years of struggle. However, I have never had a single regret that I worked my way through school."

In the face of the unanimous testimony contained in the letters received from colleges and universities, the complaint commonly heard that "there is no longer an opportunity for the poor boy who wants to secure a medical education" is entirely without foundation. The fact that from 50 to 65 per cent. of the students enrolled in many of our universities are working for a part or all of their expenses shows, not only that there are abundant opportunities, but also that there are many ambitious, energetic students who are now obtaining an education and paying for it as they go. No student, therefore, who is physically and mentally sound should fail to secure the advantage of a university education simply because of limited means.

From Infection to Illness.—From infection to first illness, lung tuberculosis is a slowly creeping and insidious thing; between the two incidents the interval is probably more often years than weeks or months.—Allen K. Krause.

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SATURDAY, AUGUST 18, 1923

MEDICAL EDUCATION—PROGRESS OF TWENTY-THREE YEARS

This week, for the twenty-third consecutive year, THE JOURNAL publishes statistics regarding medical education in the United States. During these years, medical education in this country has undergone extensive improvement, and educational standards have been brought to a reasonably high plane.

BEGINNING OF THE CAMPAIGN

In 1901, when THE JOURNAL first published its statistics regarding medical colleges, students and graduates, many of the 159 medical colleges listed in the first Educational Number were known to be stock corporations conducted largely for the profit of their owners. Little or no attention was then paid to entrance requirements, even by some of the progressive colleges. In regard to the number and qualifications of teachers, the number and equipment of laboratories, the amount and use made of clinical material, or the methods of teaching employed, no definite information was available. No one, in fact, knew just how serious conditions in the medical schools actually were. Sectarian medicine was at its zenith, with twenty-two homeopathic and ten eclectic colleges. The enrolments in all medical schools had reached the enormous total of 26,417 students, and of these 5,444 graduated:

The campaign began, therefore, with the first publication of data by THE JOURNAL in 1901. The information published showed the need of improvement, and this led to the creation in 1904 of a permanent committee of the American Medical Association—the Council on Medical Education—to centralize its efforts in this particular work.

PROGRESS FROM 1906 TO 1910

As a part of its function, the Council, in 1906, took over the work of collecting and tabulating statistics relating to medical education. A permanent secretary was employed, files were established for the information, and a careful and extensive study of medical education was begun. Inquiry in regard to medical education in other countries brought out the fact that, outside the United States, there were only 154 medical schools,[1] while in the United States there were 160—clearly a large oversupply. Except in a few medical schools, also, educational standards in this country were much lower than those abroad.[2] The Council, therefore, followed two lines of procedure: First, two educational standards were suggested,[3] one for immediate adoption by the medical schools, and another, termed "the ideal standard," for later adoption. Second, mergers of medical schools were urged in cities or states in which two or more existed by which, in each instance, one stronger and better institution resulted. Through an annual conference which has been held each year since 1905, uniformity of action by the several organizations interested in medical education was secured. At these conferences, also, after extensive discussion, higher entrance requirements and improved methods of teaching were adopted.

In 1906, the Council made its first inspection of all medical schools, and in 1907 the first classification was prepared. This was read at the annual conference and at the meeting of the House of Delegates of the American Medical Association in that year, and each college was notified of its position in the classification. In 1910, the Council completed its second tour of inspection and prepared another classification of medical colleges, which was published.[4] By this time, the number of medical colleges had been reduced, largely by mergers, from 162 to 131; the number of graduates was reduced from 5,747 to 5,440, and the number of students from 28,142 to 21,526. Although the total number of medical colleges had been reduced, the number which had adopted one or more years of college work as a minimum entrance requirement had been increased from four to thirty-five, and eight state licensing boards were requiring an equal standard of preliminary education.

Following the first inspection of the medical schools, at the urging of the Council, the Carnegie Foundation for the Advancement of Teaching consented to make a survey of the medical schools. During 1909-1910, therefore, the second tour of inspection was made jointly by representatives of the Council and the Foundation. In its report, published in 1910, the Carnegie Foundation made no classification and suggested no standards, but it did secure a wide lay publicity to its report, which was of great service in the later development of medical education.

PROGRESS FROM 1910 TO 1916

During the four years 1906 to 1909 inclusive, the Council collected sufficiently complete information regarding all existing and extinct medical colleges to permit the publication of a reliable chart,[5] which showed

1. List in J. A. M. A. **49**: 596 (Aug. 17) 1907.
2. See chart in J. A. M. A. **55**: 680 (Aug. 10) 1910.
3. J. A. M. A. **45**: 270 (July 22) 1905.
4. J. A. M. A. **54**: 2061 (June 1) 1910.
5. J. A. M. A. **61**: 578 (Aug. 23) 1913.

the number of medical colleges existing in the United States in each year since 1765, when the Department of Medicine of the College of Philadelphia—now the University of Pennsylvania—was organized. In 1910, also, the Medical Students' Register was established, through which a better record has been kept of the personal and educational histories of medical students, as well as the facts regarding their promotion from class to class. In the establishing of this register the majority of medical schools have given a most hearty and gratifying cooperation.

During the second period (1910-1916), two other inspections of medical colleges were made, and revised classifications published. During this period also, the total number of medical colleges was further reduced from 131 to ninety-five; the number of medical students from 21,526 to 14,022, and the number of graduates from 4,440 to 3,518. The number of medical colleges requiring one or more years of college work for admission was further increased from thirty-five to eighty-four, and the number of licensing boards holding to these higher requirements was increased from eight to thirty-three. The majority of medical colleges also adopted more strict and reliable methods in admitting students, and, through the reports for the students' register, the strictness with which the entrance requirements were administered was known with fair accuracy, and any faulty methods or "paper standards" were promptly noted. The constant agitation for better conditions, aided materially by the report of the Carnegie Foundation, so appealed to philanthropists that endowments for medical education were greatly increased, and large gifts for medical buildings, new laboratories, scholarships, endowed chairs and teaching hospitals became of frequent occurrence.

In 1914, a year of college work, including courses in physics, chemistry and biology, as a requirement for admission to medical schools was made an essential for the Council's Class A rating. Thus, the "ideal" standard suggested in 1905 became the essential standard in 1914. In 1916, the entrance requirement for Class A medical schools was further extended to two years of college work, to be effective, Jan. 1, 1918. This was not a drastic ruling, since forty-six medical colleges and seventeen state licensing boards had already adopted that standard.

PROGRESS OF THE LAST SIX YEARS

By 1917, when the United States entered the World War, the total number of medical schools had been reduced to ninety-five, but the number with reasonably high entrance requirements had been increased from four to eighty-six. For several years, also, the majority of graduates had received a much better training as a result of the greatly improved conditions in medical schools. It was these recent graduates who in large proportions entered the government medical services and had in charge the medical welfare of America's soldiers and sailors. The campaign for improvement, which had made such rapid headway since 1901, was, therefore, of great benefit to the nation during the war.

The first complete inspection of all graduate and post-graduate medical schools was made in 1916, and a second inspection in 1919. At the annual conference in March, 1921, reports were presented giving suggestions in regard to the training that should be required to prepare physicians to practice the various specialties. During the college year of 1922-1923, a third tour of inspection was completed and a list was prepared of graduate medical schools which were deemed worthy of approval. At the conference this year in March, a report was presented setting forth a schedule of principles or essentials which should govern graduate medical schools. In June, a revision of these principles was included in the annual report to the House of Delegates and was adopted by that body.[6]

SUMMARY OF PROGRESS MADE

During the twenty-three years, medical education has been greatly improved, and educational standards are now on a par with those of other leading nations. A large oversupply of medical schools, including many low type institutions, has given way to a more normal supply, of which it is definitely known that all but six[7] require for admission two or more years of college work. But many other improvements have been made: Endowments have been increased; new and larger medical buildings have been erected, and, in a score or more, entirely new teaching plants constructed; more and better equipped laboratories have been established; better hospital relations have been secured—several colleges having built hospitals of their own—and better teaching methods have been adopted. The number of students was reduced from 28,142 to 13,052[8] in 1919; the proportion of medical students in well equipped medical colleges was increased from 3.9 per cent. to 87.9 per cent. Since 1919, the number of students has increased to 17,432, of whom 94 per cent. are in Class A colleges. Of medical graduates, likewise, although the total has been reduced by 40 per cent., the number coming from high grade, well equipped medical colleges has been increased from 5.6 per cent. to 92 per cent. The number of graduates this year shows an increase of 591 over last year, when the smallest number graduated. Indications are that the next few years will show a steady increase, and that a still larger percentage will be from Class A medical schools.

The progress made in the improvement of medical education has been much more rapid, and fewer difficulties have been experienced than were anticipated at the beginning of the campaign. This was due largely

6. These principles and the list of approved graduate medical schools are published this week on pages 558 and 559.

7. These are the six medical colleges rated in Class C, as shown in Table 1 on pages 550 and 551.

8. The lowest number was 13,052 in 1919; as will be noted in the statistics, enrolments are again on the increase.

to the cordial and ready cooperation received from the officers of medical colleges and state licensing boards, both individually and in their national organizations. The publicity secured by the report of the Carnegie Foundation for the Advancement of Teaching was a great help in the campaign, particularly in calling the attention of philanthropists to the financial needs of medical schools. The end sought has been attained, and medical education in the United States is now equal to, if it does not surpass, that in any other country.

THE CHLORIN ANTISEPTICS

During the Great War, when hypochlorite solutions came into wide use, their composition varied, owing chiefly to the lack of chemical control, and to the fact that formulas were changed a number of times. Finally, two or three years after their introduction, a standardized preparation—surgical solution of chlorinated soda [1]—was evolved. The essential attributes of this solution have been found to be (1) a definite alkalinity, mild in character (p_H 8 to 10); (2) hypertonicity, and (3) presence of the correct amount of sodium hypochlorite (from 0.4 to 0.5 per cent.). The success of treatment with this solution was dependent chiefly on good surgical technic coupled with rigorous laboratory control.

Because the hypochlorite preparations in use were so unstable and existed only in solution, Dakin and his co-workers continued their researches, endeavoring to obtain other chlorin-bearing antiseptics which would not possess these two major disadvantages. The first one introduced was chloramin-T (sodium paratoluenesulphochloramid); soon afterward followed the closely allied dichloramin-T and the water sterilizing agent halazone.[2] Both chloramin-T and dichloramin-T were favorably received as worth while additions to materia medica. The products have now been on the market for more than five years. Because they do contain the chlorin atom in its less stable modification, the composition and purity of the "chloramin" preparations have been watched carefully by the Chemical Laboratory of the American Medical Association. A recent report [3] from the laboratory deals with the examination of market specimens of the brands described in New and Nonofficial Remedies. Out of eight specimens of chloramin-T powder examined, one was considerably substandard, two were slightly substandard, and five were satisfactory. The chloramin-T tablets, chloramin-T pastes and an aromatic powder containing chloramin-T and sodium bicarbonate were satisfactory. Two out of four specimens of a surgical powder containing chloramin-T and zinc and sodium stearates were found to be quite decomposed. All of the market specimens of Council-accepted dichloramin-T complied with the standards. An investigation was also made of specimens which had been analyzed five years previously. The results showed that chloramin-T and halazone were sufficiently stable to be kept in solid form over a period of five years, whereas dichloramin-T decomposed slowly.

In comparing hypochlorite solutions (such as surgical solution of chlorinated soda-Carrel-Dakin) and the "chloramins," Dr. P. N. Leech, who made the examinations, points out that they have a common characteristic, namely, a positively charged chlorin atom; this relatively unstable atom (Cl^+) has a tendency to go over to the relatively more stable chlorid (Cl^-). Hence, the chloramins as well as the hypochlorites are active oxidizing agents. On this oxidation factor, Dr. Leech believes, depends the antiseptic or germicidal action of these preparations. Assuming this premise, the question arose as to what effect the reaction of the solution would have on the oxidizing power. Measurements of the oxidation potentials showed that the oxidizing power of chloramin-T was much greater in neutral than in even slightly alkaline solutions, and the power decreased with relatively small increase in alkalinity. Thus the statement is advanced that "it would not be surprising to find that the hydrogen ion concentration (C_H), the oxidation potential and the bactericidal coefficient would be in direct ratio." Therefore, one strength of a solution of pure chloramin-T might be active as a germicide in certain conditions, while a solution of the same strength containing sodium bicarbonate might be inadequate. As is suggested in the report, there is need for bacteriologic work to determine this factor.

1. For the methods of preparation and the assay, see New and Nonofficial Remedies, 1923, p. 142.
2. Chloramin-T, dichloramin-T and halazone are described in New and Nonofficial Remedies, 1923, pp. 143-147.
3. Leech, P. N.: Synthetic Drugs, IV, Examination of American-Made Chloramin-T, Dichloramin-T and Halazone, J. Am. Pharm. A. 12: 592-602 (July) 1923.

RESUSCITATION FROM GAS POISONING

The question of resuscitation after carbon monoxid asphyxia, such as follows illuminating gas poisoning, poisoning in mines and from automobile exhaust gases, has been the subject of investigation by a commission [1] on resuscitation since November, 1921. In its final report,[2] just issued, after reviewing previous investigations on this subject, the commission announces the results of inquiries made along three lines: First, studies were made to determine whether or not the exuberant use of positive pressure ventilation—as with

1. The Commission is composed of Cecil K. Drinker, M.D., associate professor of applied physiology, Medical School of Harvard University, chairman; Walter B. Cannon, M.D., professor of physiology, Medical School of Harvard University; David L. Edsall, M.D., dean of the Medical School of Harvard University and professor of clinical medicine; Howard W. Haggard, M.D., instructor in applied physiology, Yale University; Lawrence J. Henderson, M.D., professor of biologic chemistry, Medical School of Harvard University; Yandell Henderson, Ph.D., professor of applied physiology, Yale University; Francis W. Peabody, M.D., professor of medicine, Medical School of Harvard University; Royd R. Sayers, M.D., chief surgeon, United States Bureau of Mines, Washington, D. C., and Charles B. Scott of the Bureau of Safety, American Gas Association.
2. Final Report of the Commission on Resuscitation from Carbon Monoxide Asphyxia: the Treatment of Carbon Monoxide Asphyxia, J. Indust. Hyg. 5: 125 (Aug.) 1923.

the lung motor or pulmotor—might not cause immediate cardiac or circulatory failure in seriously gassed patients. Investigations on animals indicated that such a belief was not well founded, and that lung rupture did not occur even when extreme pressures were used.

Next, the question whether or not the positive pressure apparatus might disseminate infection throughout the tissues was studied, and it was found that such apparatus does cause an increase in the amount of tracheal material that reaches the lung. The third point concerned the actual ventilating efficiency of the apparatus. The tests made indicated that an experienced physiologist can regulate the volume of air properly, but that with the simple directions which can be given nonmedical life savers, it is not probable that the machines can be operated with the success that is attributed to them on comparison. The conclusion was reached that the Schäfer prone pressure method of artificial respiration is even more efficient than has been supposed.

The final report also calls attention specifically to the use of a method devised by Drs. Yandell Henderson and H. W. Haggard for treating patients who have been gassed by carbon monoxid with inhalations of 5 per cent. carbon dioxid and oxygen. This method of treatment has been thoroughly tested in New York City [3] and elsewhere, and the commission believes that it is a valuable one and recommends its use. Since the method demands the presence of special apparatus, it is also recommended that provision be made for supplying such inhalation apparatus in districts or occupations in which carbon monoxid poisoning is fairly common.[4]

Current Comment

THE HOSPITAL INTERNSHIP

Without an internship in a modern hospital, a medical student's training is incomplete. This internship now constitutes a year of advanced clinical instruction, and is spent in the personal examination and treatment of patients. The student, while still under supervision, learns to apply the knowledge he has previously obtained in the clinical years of the medical course. Any errors he may make either in diagnosis or in suggested treatment are corrected and actually aid in his training, whereas in individual practice they might be repeated indefinitely, to the detriment of his patients. In the one or two years of intern training, also, the student has obtained more practical knowledge, perhaps, than he would obtain in the first five years of individual practice. Following such a training he enters practice after his skill in diagnosis and treatment has been demonstrated—a matter of obvious importance to the public. Meanwhile, during his intern service, patients in the hospital have received more well supervised care than would be possible in a hospital without interns. As medical education has been improved and as students have been better trained in medicine, the value of their services as interns in hospitals has been greatly enhanced. This has led to a larger demand, which has been further increased by many new hospitals. This demand cannot be met by the number of students graduating each year because, although the numbers of graduates are increasing, so also is the demand for interns. There is a further important development in connection with intern training, however, that may help to solve the problem. The practice of some hospitals in requiring recent graduates to enter at once on an intern service in a single surgical or other special department of the hospital, rather than in a general rotating service, is now recognized as faulty. This is one of several influences which are precipitating young physicians into specialization in fields for which they may not be best adapted, and for which the training obtained is too brief to develop the essential knowledge and skill. It would be better to require all young physicians to complete a rotating internship in a general hospital which will qualify them for general practice. Then those who desire to specialize will have a better idea as to which specialty to select. Again, the heads of special departments can select from among the interns those best qualified to act as special interns or residents, each one to serve as long as is necessary to complete the essential training in his chosen specialty. A broader plan is being followed in some hospitals whereby essential review courses in the fundamental sciences and certain advance courses in physical diagnosis and in technic are being required for admission to the special internship or combined with it, thus providing a more complete training in each specialty. This arrangement is particularly adaptable in hospitals connected with medical schools where the facilities for the additional review courses are available. The arrangement for such advanced special internships by many well conducted general and special hospitals not only will help to relieve the present shortage of interns, but also will provide more opportunities for the complete and efficient training of those who are to enter the various specialties, and, better still, will further improve the routine care of patients in those hospitals.

IODIN AS A PROPHYLACTIC FOR GOITER

Typical of the careful progress of scientific medicine is the gradual development of the prophylactic administration of iodin for goiter, since Marine and Kimball published their first results several years ago. As pointed out by them in their first report on the experiment in Akron, Ohio, the administration of iodin for prophylaxis is based on sound experimental data including work in various laboratories for ten years

3. Henderson, Yandell; and Haggard, H. W.: The Treatment of Carbon Monoxid Asphyxia by Means of Oxygen + CO_2 Inhalation, J. A. M. A. 79: 1137 (Sept. 30) 1922.

4. The commission has prepared a booklet giving directions for treatment, which may be obtained from Mr. Oscar H. Fogg, Secretary-Manager of the American Gas Association, New York City.

previously. In 1917, they presented the problem and concluded that the risk of inducing manifestations of exophthalmic goiter from the use of iodin in physiologic doses is exceedingly small, even in those cases in which there are large hyperplastic thyroid glands. They suggested the administration of sodium iodid daily for two weeks as a prophylactic agent. The progress of their work and its gradual spread through goiter districts has been recounted in THE JOURNAL both editorially and in the original contributions. These fundamental articles have recently been collected under one cover by the Western Reserve University in its monthly bulletin for July. The *Bulletin* concludes with a brief summary by Dr. O. P. Kimball, giving the progress of the work to the present time. In Zurich, in 1918, the prophylactic administration was begun. It was found that almost every child in some of the Swiss schools was goitrous, so that the treatment was given to both boys and girls of all school grades, a few milligrams of iodin being given weekly throughout the year. The results are reported as being even more striking in Switzerland than in this country. For instance, in one canton, the incidence of goiter in all school children in January, 1919, was 87.6; in January, 1922, 13.1. On account of the extraordinary results obtained during the last three years, the goiter commission of Switzerland has recommended that this method be instituted as a public health measure throughout the republic. In this country the schools of Akron, Kent and Revana counties, in Ohio, have been using the method as a routine. It has been employed in Berea and Warren, Ohio, and extensively administered in some of the large factories in Cleveland. This year, according to Dr. Kimball, the schools in East Cleveland, Shaker Heights, Warren, Niles and Findlay, Ohio, Grand Rapids, Mich., and Hammond, Ind., are using tablets, each containing 10 mg. of an organic iodid, and each girl takes one tablet a week throughout the year. The possibility of harm from the dosage of iodin is said to be absolutely negligible. There has been only one rash in a thousand cases, and not in a single instance has an exophthalmic goiter been produced. It is recommended that in endemic goiter districts every woman keep the thyroid saturated with iodin by this method during pregnancy, and that every girl keep the thyroid saturated with iodin during the ages from 11 to 16 years.

SCHOLARSHIPS FOR MEDICAL STUDENTS

Reports from a large number of medical schools show that the proportion of students who are working for all or part of their way range from 25 to 50 per cent., and that the opportunities for such help are no less abundant or varied than those in colleges of arts and sciences. It has long been recognized also that students of this type usually stand among the highest in their classes from the standpoint of both scholarship and leadership in medical school activities. In recent years, the difficulties under which such students are working have been increased in two respects. First, the increased cost of furnishing a medical training has led, but to a lesser extent, to increased fees for tuition. This has added to the students' financial burden. Next, the wide range of the present-day medical curriculum with its varied schedule of lectures, laboratory and clinical courses requires a much larger portion of the students' time than in former years. The student, therefore, cannot earn much money toward his expenses without neglecting to an equal extent his medical school work. In order to offset these two difficulties, about thirty progressive medical schools have established loan funds and about forty have established from one to eighty-four free scholarships each, or a total of about 550 scholarships, for medical students during their four year medical course. There are less than 140 scholarships available, therefore, for the 4,000 or 5,000 medical students who each year begin the study of medicine. To provide for the twenty-five or larger percentage who will need financial assistance, many more scholarships are essential; and these should provide something in addition to tuition charges. Those having funds to give could find no project of greater value to civilization than in providing scholarships whereby many worthy and ambitious men and women can make their way through medical school without necessarily neglecting any of the real essentials of their medical training. At the same time, these scholarships should be awarded only to those whose scholarship and tenacity of purpose have been demonstrated.

RELATION OF MEDICAL EDUCATION TO THE MEDICAL PLANT

Two letters, published under "Correspondence" this week, deal with two main problems concerned in the relation of education to the medical plant. The limitation of enrolments by medical schools is a safeguard against the admission of more students than can be furnished with a modern medical education with the space and facilities available. Such restrictions are encouraging, as compared with conditions formerly prevailing when certain medical schools were crowded almost to standing room capacity. Under such crowded conditions neither adequate supervision nor anything like a satisfactory medical training was possible. The limitations fixed by medical schools usually have been higher than the average number per class admitted during the previous several year period. For example, since 1916 the average enrolment in each class in Vanderbilt University was only thirty-six, although in one or two years the numbers in the first year classes slightly exceeded the limit (fifty). The average yearly enrolment in all four classes since 1916 has been only 187, and in only one year did it exceed the maximum enrolment of 200 students. Under the limitations that have been fixed at present by Class A medical schools there is still room for larger numbers of students than have been enrolled during the last twelve years. While many students may not have succeeded in entering the school of their first choice, we have yet to hear of a single well qualified student who has failed to secure admission to some Class A institution. The second problem relates to the cost of maintaining the modern medical school. This cost is four or five times larger than the amount obtained from students' fees, and properly so, since the institution is something more than a teaching plant. It is a research plant which is

constantly adding new facts to the knowledge of medicine, and most of the time of the full-time staff is devoted to such work. The hospital, although a part of the teaching plant, is rendering a service to the public more valuable than its cost of maintenance amounts to. Meanwhile, the research work as well as the hospital service to the patients is enhanced by the fact that active teaching is being carried on, and likewise the teaching furnished to medical students is usually more valuable and up to date because, through research, both teachers and students are informed in regard to the latest and best methods of diagnosis and treatment. The number of modernly equipped institutions, such as Vanderbilt, is rapidly on the increase, and because of their safeguards against overcrowding they are sure to turn out in the future better physicians and in larger numbers than could possibly be done under conditions formerly prevailing.

THE CAUSE OF SCARLET FEVER

In 1921, an Italian investigator, Professor G. di Cristina, director of the Institute for Clinical Pediatrics of the University at Palermo, isolated a small anaerobic diplococcus from patients with scarlet fever. Now, Professor G. Caronia and Dr. M. B. Sindoni[1] of a similar clinical institute at Rome have confirmed the work of Dr. Di Cristina and assert with conviction that this organism bears a causative relationship to the disease. Their report appears in detail in the Italian periodical *Pediatria*, and it is supported by five color plates showing the diplococcus as it appears on the special culture mediums used for its cultivation, the material being derived from the bone-marrow, blood, cerebrospinal fluid or throat. The diplococci are few in number, but the extreme turbidity of the culture mediums suggests the presence of some ultramicroscopic form in addition. As evidence for their claims, the Italian investigators cite the constant positive bacteriologic findings, the reproduction in young rabbits of a constant clinical picture (in some, closely resembling human scarlet fever); agglutination, complement fixation, and opsonic index tests all positive and absolutely specific; the passive immunity conferred on the infected rabbits by injection of serum from children convalescing from scarlet fever, and the active immunization of children vaccinated with killed cultures and afterward exposed to scarlet fever. In fact, so certain were they of their results that they attempted vaccination of four healthy children with the cultures; no sickness resulted. Presuming that the organism had lost much of its virulence by cultivation, they then vaccinated five children who were presumably in a more receptive condition, since they were convalescing from measles. All of these children developed what is asserted to be an attenuated form of scarlet fever after inoculation with the cultures. The biologic tests made on these children were constantly positive, as also in the four healthy ones inoculated who did not show any signs of the disease. In order to test the effects of the inoculations, the children were submitted to contact with other patients with scarlet fever, but did not contract the disease. As is well known, other investigators have, from time to time, claimed the discovery of organisms presumed to bear a causal relation to scarlet fever, but thus far without acceptance. In the case of the Italian observations, the evidence is more extensive than any yet heretofore offered. Nevertheless, the reports concern so few experiments, and the pitfalls of diagnosis in scarlet fever are so obvious, that considerably more investigation and experience will be required before these claims can be accepted. Certainly the observations are of interest. We assume that the conditions under which these investigations were carried on were such as to preclude possible injury to the children.

1. Caronia, G., and Sindoni, M. B.: Etiology of Scarlet Fever, Pediatria **31**: 745 (July 15) 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Floyd L. Abernethy, health officer of Barbour County, has resigned to accept a position as field director with the state board of health.

Garbage Tax a Health Measure.—The health department of Florence has asked the Chamber of Commerce to indorse an ordinance whereby every person in the city would be compelled to pay a garbage tax, the city undertaking to collect all garbage. The tax would be approximately $4 a year and the control of the garbage collection department would be solely in the hands of the public health service. The present system was stated by the health department to be a menace to public health. This taxation plan, which was put into operation at Gadsden, has been successful.

CALIFORNIA

Physicians Exempt from Speed Laws.—California has recently exempted vehicles operated by physicians on emergency calls from speed regulations. Speedtraps have also been eliminated and traffic officers are now required to patrol the highways in uniform under the California Motor Vehicle Law.

Personal.—Dr. Cuthbert M. Fleissner, Santa Rosa, has been appointed chairman of the advisory health board of the city to succeed the late Dr. Jackson Temple.——Dr. Ernest H. Pape has resigned as health officer of Berkeley. Dr. Frank L. Kelley, lecturer in preventive medicine and hygiene, and director of the state hygiene laboratory at the University of California, has been appointed to succeed Dr. Pape.

Hospital News.—Additions to St. Vincent's Hospital, Los Angeles, to cost $1,250,000, will be started in September, one unit of which will accommodate 350 beds. There will be a complete department for children, and a maternity division. ——Plans have been completed by Dr. Newton T. Enloe for a new hospital at Chico. There will be seventy-five rooms and about 100 beds.——The St. Joseph Hospital, San Diego, will erect modern hospital buildings at a cost of $400,000 on property owned by the institution in Fleischer's addition.——The Chinese of San Francisco have raised $120,000 to erect a hospital for Chinese in that city.

CONNECTICUT

Gift to Yale University.—The sum of $2,000 has been pledged by the Laura Spelman Rockefeller Memorial Foundation to Yale University, New Haven, for the Yale Psycho-Clinic. This clinic, which is directed by Dr. Arnold Gesell, professor of child hygiene, has been making studies of children of preschool age, and has cooperated extensively with the public school system and the charitable agencies of Connecticut.

GEORGIA

Statistics on Medical Attendants.—According to a report issued by the state bureau of statistics, July 31, nearly 5,000 people died in Georgia last year without a medical attendant. On 671 of these records the cause of death was stated as due to accidents, suicides or homicides, but 4,301 were stated as dying from disease. In 1920, the Georgia cities, with more than 10,000 population, had one physician to 425 people, while the smaller cities and country districts had one for each 1,148. The decrease in the number of physicians and centralization in the larger cities with the economic conditions are the reasons given why one death in every seven in 1922 occurred without medical attention.

University News. — The following changes have been announced in the faculty of Emory University School of Medicine, Atlanta: Hubert Sheppard, Ph.D., professor of gross and applied anatomy, has resigned to accept a position at Rush Medical College, Chicago; Dr. R. Henry Baldwin, assistant professor of physiology, has resigned to join the staff of the St. Louis Hospital; Dr. Ernest B. Sare, professor of pathology and bacteriology has resigned to become pathologist and bacteriologist to the Georgia State Insane Asylum, Milledgeville, and Dr. John Funke has resigned as professor of pathology to resume private practice in Atlanta.——Governor Walker has appointed Dr. John F. Lunsford, Preston; Dr. Elton S. Osborne, Savannah, and Dr. Henry W. Shaw, Augusta, as members of the board of trustees of the University of Georgia Medical Department, Augusta.

ILLINOIS

Public Health News.—According to reports reaching the state department of public health, a mild epidemic of typhoid fever has appeared in Peoria. To date sixteen cases have been reported with four or five suspect cases under observation. The local health officer reported that the outbreak is apparently milk borne. A state epidemiologist is conducting an investigation.——During the first half of this year fifty-one well baby conferences were held under the direction of the state department of public health and fifty more are scheduled. Announcement was made that a number of requests for professional assistance at baby conferences has been turned down because the schedule of the medical staff available is completely filled. —— Announcement has been made that seven physicians have been appointed as district health superintendents on the field staff of the state department of public health. The newly appointed men are among those dropped from the department medical staff, July 1, because of a cut in the appropriation. Civil service ratings and efficient public health service records were the determining factors which governed the appointments, according to Dr. I. D. Rawlings, state director of public health.——The board of education in East St. Louis has appropriated $5,000 for the establishment of medical inspection of pupils in the public schools during the coming season. According to reports the personnel for doing the work has not yet been chosen.

Chicago

Barbers Practicing as Physicians.—Harry F. Shepard and S. J. Pole, according to reports, were arrested, August 8, for practicing medicine without licenses. Shepard and Pole are barbers during the day but in the evening are "doctors" with offices at 3108 Madison Street.

Memorial Hospital Dedicated. — Nearly 15,000 persons attended the dedication ceremonies of the Lutheran Memorial Hospital, Chicago, August 12. The hospital is a memorial, erected at a cost of $700,000, to Lutheran soldiers who died in the World War. A tablet containing 100 names was unveiled. Dr. George H. Schroeder, Chicago, has been named chief of staff at the hospital.

Personal.—Senior Surgeon Otis B. Mallow, U. S. Public Health Service, Washington, D. C., has been appointed officer in charge of the U. S. Veterans' Hospital No. 30-A, Chicago. ——Dr. Joseph Springer, who recently resigned as coroner's physician, has been reappointed physician in charge of murder investigations.——Dr. Hertha Kraus, commissioner of public welfare, Cologne, Germany, is visiting in Chicago to study welfare conditions here.

INDIANA

Hospital News.—Adams County's new hospital, Decatur, built at a cost of $125,000, was formally dedicated, July 29, to those who from that county served in the World War. The institution has thirty-one rooms for patients and three sun parlors.——The Putnam County Hospital, Greencastle, was opened to the public, July 29. The hospital site of 3 acres was donated by William Kreigh and A. G. Brown of Greencastle.

School Houses Condemned.—The state board of health has condemned the following Hancock County district school houses: Center township, Washington and Benevolence school houses; Jackson township, Cleveland school house, and Sugar Creek, Brier school house. This means that these schools cannot be used for the fall term and some means will have to be taken to procure suitable housing facilities for the pupils this winter.

MAINE

Public Health News.—At a meeting of the Penobscot County Public Health Association at Bangor, July 27, it was decided to affiliate that society with the Maine Public Health Association. Dr. Byron G. Croxford, Newport, president of the county association, was elected as the member from Penobscot County on the board of directors.

Medical Meeting.—At the annual meeting of the Somerset County Medical Society at Lakewood, August 2, Dr. Henry E. Marston, North Anson, was elected president; Dr. Ray C. Brown, Pittsfield, vice president, and Dr. C. Earl Richardson, Skowhegan, secretary-treasurer. Dr. Charles A. Moulton, Hartland, president of the Maine State Medical Association, spoke on the work of the state association. Dr. Edwin T. Wyman, Boston, delivered an address on "Artificial Feeding of Infants."

MARYLAND

More Diphtheria Clinics.—The commissioner of health of Baltimore, Dr. C. Hampson Jones, has established additional diphtheria clinics in order to be able to test every child before the schools open in the fall. Clinics have been established at the following points: Health Department Building, public school No. 83, basement of Calvary Church, public school No. 5, public school No. 13, St. Andrew's Parochial School and public school No. 94.

MICHIGAN

Physician Amnesia Victim.—According to reports, Dr. James H. Anderson, Detroit, who disappeared last November, has returned home with his memory completely restored. Dr. Anderson states that he regained possession of his faculties while working as an orderly in a Chicago hospital.

Causes of Death Among Preschool Children.—During 1922, 2,276 deaths occurred among children under 1 year of age. Between the ages of 1 and 6 years there were 1,020 deaths, which represents about 9.2 per cent. of the total, a larger percentage than is represented by any other 5-year age group. The principal causes of death among children under 6 years of age during 1922 were bronchitis and pneumonia (648), enteritis (448), and measles (171).

MISSOURI

Help for Crippled Children.—In April, 1922, the St. Louis Medical Society offered free treatment to crippled children at a series of clinics. The society found, on investigation, that these children were handicapped by lack of educational facilities. Fifty-eight crippled children were found unable to attend school because of their condition, while more than 200 in attendance were backward, and were unable to climb stairs or move from one classroom to another. The board of education was informed of these conditions. At its session, July 10, it decided to open a temporary school for crippled children at the coming term, and $40,000 was voted for equipment. Plans will be made for a permanent building, based on experience with the temporary school.

NEW JERSEY

Illegal Practitioner Fined.—Salvator Spinelli, Rahway, was arrested in March, 1923, on a second charge of practicing medicine without a license, and when the case came to trial, June 26, pleaded guilty and paid the penalty. Spinelli had been found guilty of a similar charge in December, 1920.

Playground Showers.—The superintendent of recreation, Patterson, has designed a shower device for children for hot days which yields a spray over a half circle 60 feet in diameter, and which has been set up at the fire stations and playgrounds of that city. It may be attached either to a fire hydrant or to any length of hose, and its volume is regulated by an operator in the "dry zone."

NEW YORK

Hampton Clinical Society Meets.—This newly formed medical society recently held its first meeting at the Southampton Club, Southampton, L. I. A dinner followed the meeting. Among those who presented papers were Drs. Allen G. Terrell, Horace Hallock, George H. Schenck, William Cunningham, Irvine J. Russell, William St. Lawrance, John H. Nugent and Joseph S. Wheelwright.

New York City

Poliomyelitis.—There have been 109 cases of poliomyelitis reported for June and July this year, as compared with twelve for last year, and forty-six for 1921. There have been five deaths. The sections of the city in which the majority of cases have appeared are in order of importance: Borough of the Bronx, Corona and Flushing districts of Queens, the lower East Side of Manhattan, Borough of Brooklyn. This slight increase in poliomyelitis is not sufficient to justify apprehension.

Scholarship Fund for Physicians.—The American Child Health Association has announced the establishment of a $10,000 scholarship fund, to be awarded to physicians now engaged in child health wor' for study in medical centers, travel and observation of child hygiene work. This is the third endowment of the kind which this organization has created within the last six months. The purpose of the last appropriation is to meet the demand for more and better trained physicians in the field of child hygiene.

The Insulin Committee.—The Insulin Committee, recently organized to provide free insulin treatment for diabetics of the city unable to pay for treatment, has announced the receipt of $2,500 from the New York Foundation; $2,500 each from the Hofheimer Foundation and Felix M. Warburg; $1,000 each from Marshall Field III, J. J. Wyle and Mrs. J. J. Wyle; $500 each from Frederick Strauss and Mrs. Jacob H. Schiff, and $250 each from Ellen C. Auchmuty, Jules S. Bache, Norman Goldman, John L. Wilkie and E. F. Albee. The treatment at present approximates $1.20 per day for each patient.

Harlem Health Center Experiment Reports.—This experiment, which is being conducted for a period of three years through the joint efforts of twenty-two organizations sponsored by the New York Chapter of the American Red Cross, announces an increase of 81 per cent. in the service of health agencies to 112,000 people, with an increase of only 9 per cent. in cost. The East Harlem Health Center has evidently demonstrated that various agencies can cooperate successfully and that a community will enter into health work under the leadership of an active health center. It is believed by the officers of the center that so-called health education by means of exhibits and literature is not the most effective method of educating the people. The workers have gone to the homes of 20,000 families and have interested them through friendly visits, advice and practical help. With the funds available, the center is conducting a demonstration within the area to determine what might be considered adequate service and how the work can best be done. The experiment is being conducted in two of the eight sanitary districts of the area. The annual budget is $65,000, half being contributed by four cooperating agencies and half by the Rockefeller Foundation.

NORTH CAROLINA

Typhoid Epidemic.—Sixty-two cases of typhoid fever have been reported to the city health department of Greensboro since the beginning of the outbreak during the latter part of June. Fifteen new cases were reported for the week ending July 23, as compared with twenty new cases during the previous week. Certain milk supplies which had not been pasteurized are thought by the city health officer to be the source of the epidemic.

Dr. McBrayer to Remain.—The special committee appointed by the legislature to investigate charges that the State Sanatorium for Tuberculosis, Asheville, was mismanaged found that the charges were "not sufficient to warrant their recommending the removal of Dr. Lewis B. McBrayer from the position of superintendent of the institution," but that "Dr. McBrayer and his son, Louis, have violated Section 4390 of the consolidated statutes of North Carolina of 1919, technically, in trading with business enterprises in which they have a pecuniary interest." Another charge brought against Dr. McBrayer and sustained by the committee was that he "had used at different intervals portions of the maintenance funds of the institution for the purchase and maintenance of automobiles used in connection with the institution, which transaction was neither authorized or sanctioned by the state board of health." Dr. McBrayer's work in improving conditions at the sanatorium was commended. Complaint was made, however, that in addition to being superintendent, Dr. McBrayer was postmaster at the sanatorium, secretary of the state medical association and director of the North Carolina Tuberculosis Association.

OHIO

Chiropractor Arrested for the Third Time.—According to reports, J. M. Cramblet, chiropractor of Newark, has been arrested for the third time for practicing medicine without a license. Cramblet served forty-two days in jail following his first arrest.

Dissolution of District Hospital.—The first steps in the dissolution of the district tuberculosis hospital, Urbana, operated jointly by Clark, Madison, Green and Champaign counties were taken in July in appraisement of the property. The Clark County commissioners will present a bond issue at the November election to permit that county to purchase the shares of the other counties.

OKLAHOMA

Personal.—Dr. Charles E. Barker has been reappointed city physician of Okahoma City.——Col. Hugh Scott, Muskogee, was recently elected president of the Association of Reserve Officers, U. S. Public Health Service, at the meeting in Washington, D. C.——Dr. George M. Clifton, Norman, has resigned from the board of regents of the University of Oklahoma Medical School.

PENNSYLVANIA

Poliomyelitis in Wyoming Valley.—The development of three cases of infantile paralysis on the west side, together with nine cases in Wilkesbarre and Hanover Township within the last few weeks, is an indication that the disease is spreading locally, despite warnings sent out by the city physician. Three patients have died. Parents are urged to exercise every precaution possible to avoid a repetition of the epidemic of 1916.

State Health Board Appointments.—Governor Pinchot has selected five of the six members of the state health advisory board. Two of the members of the former board, Dr. A. A. Cairns, Philadelphia, and Dr. E. A. Green, Easton, have been reappointed. Lee Masterson, Johnstown, the engineer of the board, has been succeeded by C. F. Mebus, Glenside, and the two new members named are H. C. France, Huntingdon, and L. H. Taylor, Wilkesbarre.

Physicians Named for State Work.—State Secretary of Health Miner has appointed the following county physicians as official deputies to revaccinate, free of charge, school children who have undergone two or more unsuccessful attempts at vaccination against smallpox: Morris J. Van Horn, Town Hill; Peter H. Jamison, Nescopeck; Charles W. Tressler, Shickshinny; Dewees A. W. Huebner, Fern Glen; Albert C. Snyder, White Haven; R. Emerson Buckley, Hazleton; Albert A. Redelin, Freeland, and John C. Fleming, Dallas.

Philadelphia

Health Director Appointed.—Mayor Moore, August 7, appointed Dr. Blair Spencer, assistant director of public welfare, to be director of public health of Philadelphia, succeeding the late Dr. C. Lincoln Furbush. The appointment was confirmed by the council.

Dinner for Dr. Lewis.—A farewell dinner was recently tendered to Dr. Paul A. Lewis, for thirteen years director of the laboratory of the Henry Phipps Institute of the University of Pennsylvania, by the staff. Dr. Lewis resigned to accept a position at the Rockefeller Institute, Princeton, N. J.

VIRGINIA

Personal.—Dr. Lawrence T. Royster, Norfolk, has been elected professor of pediatrics at the University of Virginia.

Hospital News.—Work has been started on the new McIntire wing of the University of Virginia Hospital. This wing will house the orthopedic and obstetric departments, taking care of 260 additional patients.——The cornerstone of the Northampton-Accommac Memorial Hospital, Lynchburg, was laid, July 4. Construction work has been started, and it is expected that the building will be ready for occupancy in a few months.

WEST VIRGINIA

President of Health Board Named.—At a meeting of the state board of health, July 25, at Charleston, Dr. Walter M. Babb, Keyser, was elected president of the board.

WISCONSIN

Personal.—Dr. Cornelius A. Harper, Madison, has been reappointed a member of the state board of health, it was announced by the governor, June 29.

Hospital News.—The new wing at St. Elizabeth's Hospital, Appleton, was dedicated, July 3.——The cornerstone for the new building of the Wisconsin Deaconess Hospital, Green Bay, was laid recently.——A site of 10 acres has been deeded to the Sisters of the Holy Cross of Switzerland for a hospital, training school and mother house at Merrill. The hospital will be erected at a cost of $30,000.——The Wisconsin General Hospital, Madison, when completed will have a capacity for 325 patients. The main building is expected to be ready for occupancy by September, 1924. The cost, including equipment, is estimated at $1,350,000.

WYOMING

Personal.—Dr. Richard M. Leake, Laramie, has been appointed health officer of Albany County by the state board of health.

CANADA

Canadian Medical Association.—At the annual meeting of the association in Montreal, June 12-14, Dr. John F. Kidd, Ottawa, was elected president to succeed Dr. David H. Arnott, London. Dr. Alfred T. Bazin, Montreal, was elected treasurer, and Dr. Thomas C. Routley, Toronto, secretary. The vice presidents of the society are the presidents of affiliated provincial associations. The next annual meeting will be held in Ottawa in 1924.

Ontario Medical Association.—At the forty-third annual meeting of the Ontario Medical Association in Windsor, Ont., May 29-June 1, the following officers were elected for the ensuing year: president, Dr. John F. Argue, Ottawa; vice presidents, Drs. George S. Young, Toronto, and John A. Macgregor, London; treasurer, Dr. G. Stewart Cameron, Peterborough, and secretary, Dr. Thomas C. Routley, Toronto. The next annual meeting will be held in 1924 in Ottawa on invitation of the Ottawa Medico-Chirurgical Society.

GENERAL

Roentgenologists Elect.—At the recent annual meeting of the New England Roentgen Ray Society the following officers were elected: president, Dr. Patrick F. Butler, Boston; vice president, Dr. William A. LaField, Bridgeport, Conn., and secretary-treasurer, Dr. Alexander S. MacMillan, Boston.

American Public Health Association's Secretary.—Mr. Homer N. Calver has been elected executive secretary of the American Public Health Association to fill the vacancy caused by the resignation of Mr. A. W. Hedrich. Mr. Calver has had experience in health work in South Carolina, New York City and in France during the World War. He is a graduate in sanitary engineering from the Massachusetts Institute of Technology.

National Safety Council.—The twelfth annual congress of the National Safety Council at Buffalo, October 1-5, will comprise sixty sessions. The American Association of Industrial Physicians and Surgeons and the New York State Department of Labor are also planning annual meetings in conjunction with the safety congress; joint sessions have been arranged. Dr. Clyde E. Ford, New York City, president of the Association of Industrial Physicians and Surgeons, and John B. Madden, chairman of the industrial safety division of the Buffalo Chamber of Commerce, will preside at the session. G. Howard Ferguson, premier of Ontario, Canada, will open the first general session. Three new sections of the National Safety Council will be formed at this congress. They are ice and refrigeration, marine, and an employees benefit association.

New Prohibition Regulations.—A change in the regulations of the prohibition law which has been tentatively decided by the advisory committee will provide that permits for certain classes of operations when once granted may continue in effect until revoked or suspended for cause or surrendered by the permittee. Permits to manufacture, sell or transport will continue as at present to require annual renewal if they are to remain operative, but the basic permits for other classes or operations will, after new regulations go into effect, not require such annual renewal. Another change tentatively agreed on was the fixing of standards for flavoring extracts and other preparations; stating more clearly and specifically the requirements as to records and reports to the office by persons operating under permit. The date when the new regulations will go into effect has not been announced.

Dental Schools Classified.—Following a survey and classification of dental schools recently completed, it was announced by the Dental Educational Council of America, August 3, that the course of study for a degree in dentistry in the United States will be lengthened from four to five years, with the purpose of bringing all dental schools to a higher standard of efficiency, epecially in medicodental subjects. Closer cooperation between the physician and the dentist in the preservation of the health of the patient will be fostered. According to standard, the dental schools were classed "A," "B" and "C." Schools placed in Class "C" are believed to need such thorough reorganization that the council will recommend to the various state dental examining boards that their graduates be barred from registration pending action by the officials of the schools so classified to bring their institutions up to the minimum standard set by the educational council.

Bequests and Donations.—The following bequests and donations have recently been announced:

Rhode Island Hospital, Providence, R. I., $500,000, by the will of Mrs. J. E. Potter, providing that $200,000 be used for the erection of a children's department.

Sherman Hospital, Sherman, Texas, $127,000 for the erection of a hospital for charity patients, by the will of Wilson N. Jones.

Williamsport Hospital, Williamsport, Pa., $50,000, and the Home of the Friendless, $25,000, by the will of Rosetta Ulman of Williamsport.

Long Beach Community Hospital, Long Beach, Calif., $50,000, by Fillmore Condit, ex-mayor of Long Beach.

For the erection of an Orgain Memorial Hospital at Bastrop, Texas, $10,000, by Mrs. S. J. Orgain.

Howard University Medical School, Washingon, D. C., $10,000, by Mr. and Mrs. Aaron E. Malone.

Chester County Hospital, Embreeville, Pa., $10,000, by the will of John F. Wallace.

Society for the Improvement of the Condition of the Blind, New York, $5,000; Mount Vernon (N. Y.) Hospital, for the purpose of endowing the Gertrude I. Duncan bed, $5,000; Visiting Nurses' Association of Mount Vernon, $3,000, and the Home of St. Giles, the Cripple, Brooklyn, $2,000, by the will of Gertrude I. Duncan of Mount Vernon.

Alice Home Hospital, Lake Forest, Ill., $5,000, by the will of Clyde M. Carr of Chicago.

Germantown Hospital and Dispensary, Philadelphia, $5,000, by the will of Mary H. Kremer.

Masonic Home for the Aged and Infirm, near Philadelphia, $5,000, and the Connellsville Chapter of the American Red Cross, $1,000, by the will of Dr. George W. Newcomer of Connellsville.

Mount Sinai Hospital, New York, $1,000, and St. Mary's Hospital, Passaic, N. J., $500, by the will of William S. Friedlander of Passaic.

Society for the Relief of Destitute Blind in the Bronx, N. Y., $1,000, by the will of Simon R. Weil. On the death of Mrs. Weil one fourth of the estate will be divided among the following institutions: Mount Sinai Hospital, Presbyterian Hospital, Children's Aid Society, Society for the Relief of Ruptured Cripples, Skin and Cancer Hospital, St. John's Guild and the Federation of Jewish Philanthropic societies of New York.

Blackford County Hospital, Hartford City, Ind., $1,000 for the equipment of a laboratory, by David May of Los Angeles, Calif.

Montefiore Hospital for Chronic Diseases, New York, $500 to the department of metabolism, by Mr. I. Miller.

Charity Hospital, New Orleans, $205, the result of a charity ball.

LATIN AMERICA

Health Centers in Mexico.—Five dispensaries will be established in Mexico City by the federal department of health in connection with its campaign against tuberculosis. Agents and visiting nurses are taking a census of tuberculous residents that they may be properly treated, and further spread of the disease arrested.

No Smallpox in Rio de Janeiro.—The *Folha Medica* of Rio states that the few cases of smallpox taken to the contagious hospital from arriving ships have been dismissed, and the city is free from the disease. A body of sixty medical students have been conducting a house-to-house vaccination campaign, the public health authorities having repeatedly enforced intensive vaccination since 1920. The results are manifest in the present freedom of the city from the disease.

Election of Officers.—The Sociedad Médico-Quirúrgica of Guayaquil has elected for 1923-1924 the following officers: Drs. J. F. Heinert, president; J. V. Payeze G., vice president, and T. Maldonado C., treasurer, all reelected; J. F. Rubio, librarian; A. J. Hidalgo N., recording secretary; F. Barbotó, corresponding secretary, and J. Dario Moral and L. Izquieta Pérez. The monthly *Anales* is published by a committee of five, including Drs. Rubio and Moral, and three other professors of the medical faculty, Drs. Miguel H. Alcivar, rector of the university; J. M. Carbo-Noboa, and J. M. Estrada Coello.

FOREIGN

Soy Bean Milk.—The *Deutsche medizinische Wochenschrift* relates that the German public health authorities have called attention to soy beans as a source of a substitute milk to use in cooking, not for infant feeding. It is said to contain large proportions of fat, protein and vitamin B, but not A.

American Ophthalmologists in Austria.—About forty American ophthalmologists and laryngologists arrived in Vienna, August 4, with Professor Mackenzie of the University of Pennsylvania, Philadelphia, to follow special courses of lectures to be given for them at the University of Vienna.

Swiss Society for Natural Sciences.—The one hundred and fourth annual meeting of the society will be held at Zermatt, August 30-September 2. The meeting will be divided into fifteen sections, which include physics, chemistry, zoology, medical sciences, history of medicine and the natural sciences, veterinary medicine and pharmacy.

Vaccine Therapy in Urology.—The *Policlinico* announces that Prof. E. Pirondini is asking for data to be sent him to aid in preparing the address on "Vaccine Therapy in Urology, Exclusive of the Gonococcus," to be presented at the Second International Urology Congress to meet at Rome in April, 1924. His address is via Quintino Sella 20, Rome.

Irish Practitioners Protest Medical Legislation.—At a meeting of medical practitioners of Cork, the following resolutions were passed:

1. That the committee of Cork medical profession protest against the government introducing any medical legislation without consulting the elected representatives of the Irish medical profession.
2. That we strongly support the Irish medical committee in any action they may take in this matter.

Burma's Lunatic Asylums.—To relieve congestion in the two asylums in Burma a third will be erected. Alcohol and cannabis indica are said to cause much of the insanity in Burma; general paralysis is comparatively rare. During the recent outbreak of plague in Rangoon, immunization inoculations were given all the patients. No cases of plague occurred in the asylums.

Guy's Hospital Medical School Rebuilt.—The Prince of Wales visited the medical school of Guy's Hospital, July 2, for the purpose of opening the new anatomy, biology and physics departments, a ceremony which signalized the completion of the rebuilding of the whole school during the last twenty-six years. The total cost of rebuilding has been upwards of £100,000.

Spanish Physicians to Visit America.—Drs. Fernández Besones, inspector for Salamanca Province; Ortiz de Landazuri, of the central sanitary brigade, and Fuegó, bacteriologist of the public health department, Vigo, have been appointed by the public health service of Spain to the fellowships offered by the Rockefeller Foundation, for a visit of inspection and study in the United States.

Royal College of Surgeons of England.—At a meeting of the college in London, July 12, Sir John Bland-Sutton was elected president to succeed Sir Anthony Bowlby, who had held that office three years. Sir Berkeley Moynihan, professor of clinical surgery, University of Leeds, and Mr. H. J. Waring, surgeon to St. Batholomew's Hospital and vice chancellor of the University of London, were elected vice presidents.

Mental Hygienists Hold First Session.—The first meeting of the National Council of Mental Hygiene of Great Britain, since it became a legally constituted body, was held in London, July 12, with Sir Courtauld Thomson in the chair. Mr. Clifford Beers, founder of the National Committee for Mental Hygiene in the United States, gave an account of the work in America. An international congress of mental hygienists will be held in the United States in 1925.

Urology Congresses.—The *Medicina Ibera* states that at the Sixth Congress of the Spanish Asociación de Urologia, to convene at Madrid, October 17, the two topics for discussion will be "Hypogastric Cystoscopy," to be presented by Camiña, Bilbao, and "Indications for Operative Treatment of Calculi in Kidneys and Ureter," the discussion to be opened by Miraved, Madrid. The twenty-third French Urology Congress meets at Paris, October 10, with André presiding.

Japanese Committee to Investigate Birth Control Problem.—The *Japan Medical World* states that a committee was appointed at a recent meeting of physicians graduated from Tokyo Imperial University to investigate the advisability of practicing birth control. The meeting was the outgrowth of investigations made since the visit to Japan of Mrs. Margaret Sanger, an American birth control advocate. The minister of education and the vice minister of home affairs attended the meeting.

French Medical Congress.—October is the month for the principal medical meetings of the year in France. The Seventeenth Medical Congress is to meet at Bordeaux this year, October 27, and excursions are planned to the health resorts in the vicinity and in the Pyrenees. The subjects to be discussed are "Remote Consequences of Malaria"; "Relations Between the Sympathetic and the Endocrine Systems," and "Meningococcus Affections." The secretary's address is Dr. R. Cruchet, 12 rue Ferrère, Bordeaux.

Control of German Drugs.—Arrangements for the examination of new drugs produced by chemical manufacturers have been made by the German Association for Internal Medicine together with the Association of Sick Clubs for which the clubs have provided funds. A commission has been appointed to test the value and cost of new drugs, with Professor Klemperer, chairman. The drugs recommended by the commission will be registered. The register will be published regularly, special mention being made of drugs suitably priced for use in sick-club practice.

Commemoration of Luciani.—June 24, the fourth anniversary of his death, the body of Luigi Luciani was transported from Rome to the place of his birth, Ascoli Piceno, accompanied by members of his family and representatives of various scientific and civic organizations. A memorial stone was placed at the house where he was born, and a memorial tablet of marble with a bronze medallion was placed at the house in which he spent his youth. Professor Baglioni delivered the address at the public meeting in the theater. Luciani was rector of the University of Rome and senator, and his research on the heart and brain carried his name afar.

British Medical Association.—At the annual meeting of the British Medical Association at Portsmouth, England, July 20-28, the following officers were elected for the ensuing year: president, Mr. C. P. Childe, Portsmouth; president-elect, Mr. J. Basil Hall, Bradford; vice president, Sir Daniel Drummond; overseas vice presidents, Drs. George Adlington Syme (Melbourne, Australia), Robert H. Todd (Sydney, Australia), Harry E. Gibb (Wellington, New Zealand), Wilfred W. Pitchford (Johannesburg, South Africa) and Dugald Campbell Watt (Petermaritzburg, South Africa). The association now has 25,454 members, 2,000 new members having joined since January of this year. The next meeting will be held in Bradford in 1925.

Mission to Lepers.—At the recent annual meeting of the Mission to Lepers in London, it was stated that the mission cares for 7,735 leper inmates in its own and aided institutions and also for more than 600 untainted children, who are educated and trained in separate homes. The superintendent of the Fusan Leper Asylum, Korea, stated that, before the use of chaulmoogra oil in that settlement, the death rate was 25 per cent. In the first year after that treatment was used the death rate was reduced to 15 per cent. Since then the percentage in successive years came down to 9, 6, 6, 5, 4, and for the last year it was 2.5 per cent; but as half the deaths in the last year resulted from an epidemic of typhoid fever the death rate from leprosy was estimated at 1.25 per cent. Dr. E. Muir, leprosy research worker in the School of Tropical Medicine, Calcutta, stated that the most hopeful feature in connection with the disease in India is the increasing interest being taken by the medical profession and the public.

Deaths in Other Countries

Dr. **Donald Murray,** formerly a member of parliament; in London, July 6, aged 60.——Dr. **George J. Muriel,** J.P., Whitehaven, England, aged 81.——Dr. **Ettie Sayer,** London, fellow of the Royal Society of Medicine.——Dr. **Walter L. Pethybridge,** Plymouth, England; died, June 27, aged 54. Dr. Pethybridge was for twenty years pathologist to the South Devon and Cornwall Hospital and other Plymouth hospitals.——Dr. **R. Wiedersheim,** professor emeritus of anatomy at Freiburg, aged 75. His "Manual on the Comparative Anatomy of Vertebrates" is in its fourth edition.——Dr. **G. Meyer,** Berlin, secretary of the German Cancer Research Society, aged 63.——Dr. **G. Moyse,** Naples, who devised an ophthalmometer much used in Italy, aged 87.——Dr. **A. O. Todaro,** formerly professor of chemistry, Naples.——Dr. **S. Auerbach,** Frankfurt, author of works on neurology and surgery, aged 57.——Dr. **E. B. Casey,** Buenos Aires.——Dr. **Vital Noquet,** Lille, president of the Société de médecine du Nord and formerly president of the French Société d'otologie et de laryngologie, aged 77.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 28, 1923.

Annual Meeting of the British Medical Association

The annual meeting of the British Medical Association was held at Portsmouth. At the meeting of representatives, the important question of the relation between the association and the Society of Medical Officers of Health, which had been under discussion since the 1920 meeting and had given rise to negotiations, came up. At present the constitution of the association makes no provision for insuring that the opinions of health officers shall be made known directly to the association. A conference took place between representatives of the two bodies, and an agreement was reached. Among other things, the conference decided that preventive and curative medicine cannot be separated on any sound principle, and that any public scheme of medical services must be brought within the sphere of the general physician, whose work should embrace communal as well as individual medicine. Physicians should have access to centers and clinics established by the local authorities in order that they may gain such experience as is afforded. Clinics should be for those who are unable, for any reason, to obtain treatment from a private physician. The report of the committee was adopted, and by a majority it was decided to alter the constitution of the association so as to allow direct representation of the Society of Medical Officers of Health, while the society left medicopolitical action for its policy in the hands of the association. A minimum scale of salaries for health officers was adopted, beginning with $4,000 for populations under 35,000, and rising to $9,000 for populations of 600,000 and over, annual increments to be at the rate of 5 per cent., rising to 40 per cent. above these base rates.

DIABETES

Sir Thomas Horder, who presided over the Section of Medicine, opened a discussion on diabetes. The subject was chosen, he said, because of the introduction of insulin. It might be that the successful preparation of this internal secretion would prove to be as great an asset to medical science by assisting the interpretation of phenomena hitherto obscure as in the provision of a therapeutic agent for diabetes. The essence of the problem of diabetes had been the fact that under that name we had been dealing not with one biochemical disturbance but with several. It seemed probable that the use of insulin would not only further establish that fact, but would also serve to mark off more clearly certain very different types of cases encountered in practice. One result of this segregation we were already observing: certain cases of diabetes were benefited much less than others, even when we made due allowance for all those collateral points in the dietetic part of the treatment which were so important. Certain cases would doubtless be found not to be benefited at all. If we did not make this position quite clear, we should see many patients suffer the bitter disappointment after entertaining false hopes for which we may unwittingly have been responsible.

Dr. F. G. Banting of Toronto said that it would be several years before the limits of the effectiveness of insulin were known. As to patients giving themselves insulin, he mentioned the case of an American commercial traveler who carried his own insulin and a syringe, and described the daily injection as no more difficult than the morning shave. After a warning against this practice, he gave an outline of the experiments which led to the discovery of insulin. But the discovery threw no light on the causation of diabetes.

THE ETIOLOGY AND TREATMENT OF HEART DISEASE IN EARLY LIFE

Dr. Reginald Miller, who opened the discussion, said that in the etiology, one disease, "that great and essentially British infective disease" acute rheumatism, was dominant. But this disease was diminishing. Bacteriologists often spoke as if there were no disease "rheumatism," but we had only to see the infection at work in case after case to deny this. What was the link connecting rheumatism with poverty? Shortly before the war he started an inquiry which showed great uniformity as to dampness of houses; many cases came from basements with wet walls, mildew under the oilcloth, lack of concrete foundations, etc. In treatment we were hampered by the fact that we did not get hold of the rheumatic child as early as possible, perhaps from the ignorance of the public, which still existed, that rheumatism did not occur in childhood.

THE DECREASE IN INFANT MORTALITY

In the Section of Public Health, Dr. James Wheatley discussed the factors contributing to the recent decrease in infant mortality. He submitted this instructive table:

ENGLAND AND WALES: BIRTH RATES, DEATH RATES, AND INFANT MORTALITY RATES

Years	Birth Rate	Death Rate	Infant Mortality	Inc. or Dec.	—
1841-1850	32.6	21.6	153		
1851-1860	34.1	21.2	154	+ 0.6	
1861-1870	35.2	21.3	154	0.0	Education Act, 1870
1871-1880	35.4	20.3	149	— 3.2	Public Health Act, 1875
1881-1885	33.5	18.7	139	— 6.7	
1886-1890	31.4	18.5	145	+ 4.1	
1891-1895	30.5	18.5	151	+ 3.9	Housing of the Working Classes Act, 1890
1896-1900	29.3	17.6	156	+ 3.2	
1901-1905	28.2	16.0	138	— 11.5	Midwives Act, 1902
1906-1910	26.3	14.4	117	— 15.2	Education Act, 1907; Notification of Births Act, 1907; Children Act, 1908
1911-1915	23.6	13.8	110	— 5.9	National Insurance Act and Tuberculosis Order, 1911; Notification of Births (Extension) Act, 1915
1916-1920	20.1	13.7	90	— 18.1	V. D. Regulations, 1916; Maternity and Child Welfare Act, 1918
1921	22.4	12.1	83	— 11.0	
1922	20.6	12.9	77		

Thus there was no fall in the long period 1841-1900. But since 1900 the fall had been large and continuous. The fall in the birth rate began twenty years before the fall in the infant death rate, and during this period it amounted to 17 per cent. The general death rate had been falling for sixty years before the infant death rate began to fall. It fell in that time 19 per cent. It thus appeared that though the birth and death rates fell before 1900, the causes producing that fall (presumably in the case of the death rate better sanitation) either did not influence the infant death rate or were prevented from doing so by other factors. Dr. Wheatley held that the decrease of infant mortality was due to general increase of intelligence in parents. The beginning corresponded in time with general improvement in education. But a low mortality was quite possible with ignorance and poverty, under good conditions of sun and weather and more primitive living, particularly natural feeding. The latter part of the fall of infant mortality was probably due not only to improvement in general education but also to the special education of antituberculosis and medical inspection schemes, establishment of district nurses, and similar work. There were probably many minor factors—diminishing birth rate, cleaner milk, better medical nursing and midwifery services, diminished horse traffic, tarred roads and improved sanitation. But it was to education and the creation of a sense of responsibility, and not to material conditions, that so much improvement was due. Everything pointed to the improvement being per-

manent and progressive. The decrease affected every type of district and every part of the country.

THE VALUE OF WATERCRESS AS A FOOD

Dr. Scurfield pointed out that watercress as a green food had stood the test of thousands of years. Tradition had given it a reputation in the treatment of all sorts of diseases—consumption, gout, rheumatism, anemia, eczema and constipation. The Greeks thought it good for the mind. He believed that it contained all three vitamins. It was a cheap vegetable which, like lettuce, was eaten unspoiled by cooking, but, unlike lettuce, was obtainable all the year round.

ANESTHESIA FOR CHILDREN

In the Section of Anesthetics, Dr. Harold Sington read the opening paper on "Anesthetics for Children." He said that at the Hospital for Sick Children, Great Ormond Street, they had reached the conclusion that for children ether, preceded by a hypodermic injection of atropin, will always be the anesthetic of choice. The comparative safety of ether administration over that of chloroform was enormous. But in some cases gas and oxygen was the most advantageous.

FATALITIES FROM ANESTHETICS

Dr. A. L. Flemming expressed the view that the practice of inducing anesthesia with chloroform was too dangerous for routine work. Ether was not intolerable for this purpose when given slowly, and ethyl chlorid and nitrous oxid were available. The number of deaths from anesthetics had remained stationary during many years in spite of the great increase in the number and severity of operations—a fact that said much for the care and skill of anesthetists.

THE NERVOUS CHILD

In the Section of Neurology, Dr. Hector C. Cameron opened a discussion on the nervous child. The posture of the nervous child was characteristic. It stood exactly as drill sergeants prevented recruits from standing. It leaned against any support which offered itself. The facial muscles were in overplay, but exhaustion might produce a still face. The child was often restless, and showed what might be called "muscular vices." Pallor, constant or intermittent, was also a constant symptom. The study of the nervous child was to a great extent the study of its parents and of the powerful influences for good or evil which proceeded from them. The young child was open to suggestion of all sorts, and saw himself only with the eyes of his elders. Whatever was thought of him, said of him, even feared for him, that he rapidly became. The only child became unduly timid because he was watched with so much care. The almost insane tendency to oppose him played a great part in the development of the symptoms of unrest. Treatment called for a relaxation of discipline. The parents and nurses must pass more into the background and allow the child free play.

THE OPERATIVE TREATMENT OF CANCER

In the Section of Surgery, Mr. Herbert Paterson read a paper entitled: "Are the Results of the Operative Treatment of Cancer Better Than Twenty Years Ago?" He had looked in vain for any convincing evidence that the proportion of ultimate successes was greater today. Since 1900 there had been an increase of nearly 30 per cent. in the cancer death rate. Even granting that cancer was on the increase and that death certification was more accurate, it was not easy to understand this proportional increase if modern operations had effected the cures claimed. A comparison of operative statistics seemed to point to the same conclusion. He questioned the value of the very radical operations now frequently performed. Might not the free removal of lymphatic glands be depriving the patient of his first and main line of defense? Possibly these glands destroyed some of the cancer cells.

THE TREATMENT OF TUBERCULOSIS BY ARTIFICIAL LIGHT

In the Section of Tuberculosis, a discussion was opened by Prof. Axel Reyn, medical superintendent of the Finsen Institute, Copenhagen. By light treatment at the institute, ninety-six out of 114 patients suffering from lupus were cured, and the proportion of permanent cures was 90 per cent. Remarkable results had also been obtained in other forms of tuberculosis. He considered that active agents were the ultraviolet rays, but that the mode of action remained in doubt. The carbon arc lamp was much superior to the mercury lamp.

THE ESTIMATION OF PHYSICAL EFFICIENCY

In the Section of Naval and Military Hygiene, Capt. M. W. Flack, Royal Air Force, described the system for testing physical fitness during the war. At one time they had to recruit flying officers at the rate of 300 a day. In the tests, respiratory conditions took an important part, and were largely responsible for rejections. A man was no use for flying who could not breathe at high altitudes. General nervous stability was also important, as it played a great part in bodily endurance. A man was useless for flying who lacked the judgment and muscular control to fly efficiently, or who had not sufficient moral and physical stamina to cross the enemy's lines. The report of the war office committee on shell shock showed that the strain of modern warfare could be endured only by the disciplined and physically fit, and that the preservation of physical fitness with the prevention of fatigue played a great part in the maintenance of morale and the avoidance of war neurosis. Many men were now drawing pensions because they were admitted for duty in a state of physical unfitness to endure the strain of active service.

PARIS

(From Our Regular Correspondent)

July 20, 1923.

Fifth National Tuberculosis Congress

The fifth National Tuberculosis Congress was organized by the National Committee of Defense Against Tuberculosis and was held at Strasbourg under the chairmanship of Dr. Holtzman, president of the Antituberculosis Association of Alsace and Lorraine. Its program consisted of biologic, clinical and social problems:

SECONDARY INFECTIONS IN RELATION TO VACCINOTHERAPY

Prof. F. Bezançon and Dr. M. Chevalley of Paris endeavored to show that the rôle of secondary infections, as evidenced by the sputum of tuberculous persons, has been distorted by errors in technic. During the course of expectoration, the sputum takes up bronchial mucus and saliva, both contaminated, and to this is added the multiplication that takes place in the sputum cup. Examination of sputum is valueless unless it is fresh (not more than four hours old) and has been thoroughly rinsed with physiologic sodium chlorid solution. Direct examination of stained smears is more exact than the preparation of a culture, for culture allows the undue growth of vigorous organisms even when originally present in small numbers. Secondary infections play no part in the ordinary processes of pulmonary tuberculosis. In acute episodes in the course of pulmonary tuberculosis, they may possibly release or complicate the attack. The slight importance of secondary infections in pulmonary tuberculosis justifies but rarely the systematic use of vaccinotherapy.

In recent years, there has been in France a scandalous abuse of vaccinotherapy in the secondary infections of tuberculosis. A certain manufacturer of pharmaceutic preparations has put on the market a mixed streptococcus, pneumococcus, enterococcus and staphylococcus vaccine. As the initial letters of these four micro-organisms form the Latin word

spes (hope), the manufacturer was so bold as to give his vaccine this alluring name. Advertisements of this preparation have appeared in great profusion in most of the medical journals. Dr. Rist, physician to the hospitals of Paris, voiced an energetic protest before the congress against such charlatanism. It is depressing, he said, to see so many physicians use, without critical investigation, this so-called remedy. Assume that the injection of this vaccine is harmless—which is doubtful—in dealing with tuberculosis, a useless remedy does harm for the one reason, if no other, that it causes the patient to lose valuable time, lulls him into a sense of false security, prevents him from deciding to make the sacrifices of money and convenience necessary for effective results. It is disheartening to note that this charlatanism, which some day the minister of hygiene, the natural protector of the nation's health, will doubtless feel called on to investigate, is encouraged, consciously or unconsciously, by the majority of our medical periodicals, under the pretext, which is certainly inadmissible, that publicity is harmless.

UNDERNUTRITION IN RELATION TO TUBERCULOSIS

The part that undernutrition plays in the development of tuberculosis has been studied by G. Mouriquand of Lyons, on the basis of material from Russia and the central empires, and by Breton and Ducamp of Lille, with reference to the population of the invaded regions of France.

In Russia, Sternberg has called in question the influence of the famine on the development of tuberculosis. Kogan, Lifchitz and Cheinisse have pointed out the erroneous conclusions of Sternberg (THE JOURNAL, May 19, 1923, p. 1457). If, for the time being, there has been an apparent diminution of tuberculosis, it is because the tuberculous were the first victims of the numerous epidemics of typhus, cholera and smallpox that have raged in Russia.

For Germany and Austria we are in possession of more exact documentary evidence. In these two countries, during the war, the incidence of tuberculosis was almost doubled. The increase in mortality (just contrary of the experience before the war) affected more particularly the female population. In view of the assumption that the male and the female groups of the population received presumably the same diet, the greater increase among the female group must doubtless be attributed to the overstrain to which women were subjected, owing to the dearth of men to perform common labor. All age groups seems to have been equally affected by the increase, with the exception of children under 1 year, either breast-fed or receiving a fairly adequate supply of milk. The majority of writers emphasize the frequency of progressive forms of tuberculosis.

Since the armistice, the mortality curves of tuberculosis in Germany have been dropping, as food conditions in that country have improved, and there is a tendency toward a restoration of the prewar figures. In Austria, on the other hand, the undernutrition still continues and the mortality curve of tuberculosis does not fall, which furnishes further evidence of the relationship existing between undernutrition and tuberculosis.

In France, in the invaded regions, the mortality from tuberculosis has more than doubled, in both the cities and the rural sections, and morbidity from tuberculosis has affected more than a third of the population of these regions. In the opinion of Breton and Ducamp, there can be no doubt that the factors causing this increased mortality lie, in part, in undernutrition and, in part, in the moral degradation. The rôle of undernutrition seems paramount, especially the lack of proteins and mineral salts. As for avitaminosis, it does not appear that this is an especially serious factor in producing the gravity and the contagiousness of tuberculous infection; nor does it seem to predispose.

CLOSED AND OPEN TUBERCULOSIS

In their paper, Rist and Ameuille (of Paris) recalled the fact that, six months after the startling announcement of Koch, we find from the pens of Balmer and Fraentzel the two assertions that: (1) when we find tubercle bacilli in the expectoration, pulmonary tuberculosis is present; (2) if no tubercle bacilli are found, after repeated and careful search has been made, pulmonary tuberculosis is not present. Grancher vigorously opposed this opinion, and helped to create the conception of the existence of "closed" tuberculosis. Today this conception is beginning to lose ground, and even those who still accept the reality of closed tuberculosis admit that it is not particularly common.

F. Bezançon, although in agreement with the authors on the paramount importance of the search for tubercle bacilli, considers it nevertheless dangerous to assume that it is indispensable to discover tubercle bacilli before pronouncing the diagnosis "tuberculosis." The fact is, he says, that the type of the disease spoken of as "open tuberculosis" is often preceded by a stage in which no expectoration can occur, or, if there be such, no bacilli will be found in the sputum.

Bard of Strasbourg emphasized the need of distinguishing the theoretical side (the question of the existence of closed tuberculosis) from the practical side, or the problem of what rules should be adopted for the diagnosis of tuberculous diseases. For the use of the public services, the recognition for diagnostic purposes of a definite limit, marked by a precise criterion, presents unquestionable advantages. Even though the question as to whether the sputum contains tubercle bacilli or not may establish a standard limit that is theoretically inexact, from a practical standpoint, as an administrative measure, subject to certain exceptions, it is entirely justifiable. In considering military pensions, public sanatoriums, antituberculosis prophylaxis or social insurance, we cannot, without running into practical impossibilities, place the problem on an absolute basis. From 90 to 95 per cent. of normal persons, if not more, are infected, but are not ill.

According to Sergent of Paris, it would be dangerous to make too much of closed tuberculosis just at this time when so many persons have an interest in being classed in the army of those "injured by tuberculosis." Let us not offer them the means of deriving a profit from errors in diagnosis that can be avoided.

THE CAMPAIGN AGAINST TUBERCULOSIS

Among the social questions connected with tuberculosis, the congress considered the rôle of social insurance, the housing problem, and the rôle and the professional training of visiting nurses.

A certain feeling of dissatisfaction was manifested among members of the medical profession over the subject of extension that is being planned, in the campaign against tuberculosis, of the rôle of the visiting nurse, which, it is feared, will result in the practical neglect of the collaboration of the general practitioner. This state of feeling has found expression in the *Médecin syndicaliste*, the official organ of the Union des syndicats médicaux de France, which carries an article entitled, "A Campaign Against Tuberculosis with the Physicians Left Out."

The Thirty-Second French Congress of Surgery

The thirty-second French Congress of Surgery will be held in Paris, Oct. 8-13, 1923, under the chairmanship of Dr. Témoin of Bourges. The following topics are on the program: (1) Transfusion of Blood, with papers by Prof. E. Jeanbrau of Montpellier and Dr. V. Pauchet of Paris; (2) Critical Study of Treatment of Genital Prolapse, with papers by Professor Bégouin of Bordeaux and Dr. Savariaud of Paris, and (3) Treatment of Noncalculous Biliary Obstruction, with papers by Mathieu of Paris and Villard of Lyons.

PRAGUE

(From Our Regular Correspondent)

July 6, 1923.

Hospital Facilities in Czechoslovakia

The state secretary, Dr. J. Semerád, announced, at a meeting of the hospital section of the central organization of the Czechoslovak physicians, the results of the hospital survey carried out by the ministry of health, and the program for the erection of new hospitals in the Czechoslovak republic. Heretofore, the establishment of public hospitals was usually the result of local initiative, and it might happen that a small town with some active public body succeeded in erecting a large hospital while a larger town suffered from scarcity of hospital beds on account of neglect by public authorities. It has been the policy of the ministry of health, since its creation, to nationalize the charitable institutions, including hospitals, and to direct development and foundation from a broader view. The financial situation after the war did not permit the realization of this plan. Only the most important hospitals in industrial regions and poorer districts were nationalized; most of the hospitals remained in the hands of local, district, county and provincial authorities. There are 26,000 hospital beds in the Czechoslovak republic now. The beds are not equally distributed through the provinces. Bohemia, which is the most advanced province in the republic, has 14,899 hospital beds, or one bed for each 460 inhabitants. Moravia and Silesia have 5,386 hospital beds, or one bed for each 550 inhabitants. Slovakia has 4,463 beds, or one hospital bed for each 770 inhabitants. Carpathian Russia, which is the most backward province, shows, on the contrary, a very favorable proportion of hospital beds. There are 1,252 hospital beds in this territory, or one bed to each 420 inhabitants. This favorable condition in Carpathian Russia reflects the intensive effort of the Czechoslovak government directed against the spread of infectious and social diseases in this neglected territory. There are 26,000 hospital beds (one to each 560 inhabitants) in the Czechoslovak republic as a whole.

The program of the ministry of health provides for large hospitals in each of the twenty-one counties of the republic, each properly equipped in all branches of medicine. The ministry is developing these hospitals from those now in existence. The hospitals are not all located at the county seat, but each county will have one institution. This hospital will serve approximately 600,000 inhabitants. In addition, there will be smaller hospitals, called Type 2, which will be run largely as surgical hospitals. Hospitals of Type 3 will be quite small and will serve for the isolation of infectious diseases, and for the treatment of chronic diseases, especially advanced tuberculosis. The last type of hospital would serve a population of from 40,000 to 50,000 inhabitants. On the basis of this survey, the ministry of health will so direct the further development of the hospital system in the republic that large hospitals will be erected where they are needed, and those already in existence will be transformed into institutions conforming with the plans of the ministry.

New Home for the Council of Social Hygiene

The meeting of the delegates to the National Council of Social Hygiene, which was held July 4, in Prague, approved the plans for the creation of a common building for the national organizations which are associated in the council. The building is to be erected on a site given for the purpose by the Czechoslovak Red Cross. The grounds are located in the center of the city near the Wilson Station, and are situated on the slope of a hill which is covered with a large park. The plans, which were worked out by a special committee, provide for four buildings. One building will house the offices of the council, and provide reading rooms and a library for all the organizations, a museum, conference rooms and a large lecture hall that is intended also for the annual meetings of the delegates from the different associations. Several rooms will be reserved for the housing of delegates and foreign guests. The general secretary of the council will also have his apartment in this building. A building will be reserved for the Masaryk League Against Tuberculosis, and another for the Czechoslovak Red Cross. The fourth building is to be a first aid station with a few hospital beds, and will also house the smaller national private associations, such as the child welfare associations, the Association for Combating Venereal Diseases, and the Abstinence League. Financing of the project is almost provided, and the actual construction of buildings will be started in the fall. The organizations will be able to move into the new quarters in the course of the next year. It is anticipated that the realization of this project will be a further and important step toward the concentration and coordination of private health and social activities.

Abuse in Pharmaceutic Specialties

The medical press is discussing the so-called pharmaceutic specialties, which are usually compound remedies prepared in large factories. They cannot be compared with the American "patent medicines" because it is necessary for the composition of the remedy to be indicated on the cover. Under the law, these pharmaceutic specialties must be approved by the ministry of health before they are admitted into the drug stores. Yet, in spite of this, many specialties, especially those that are imported, are placed on the market without waiting for the decision of the ministry of health. In recent years, German and French pharmaceutic specialties have flooded the drug stores to such an extent that pharmacists and local manufacturers of pharmaceutic specialties are obliged to defend themselves. Pharmacists claim that the continued increase in the prescription of these specialties by physicians will ruin their profession, and local producers point out that most foreign specialties are illegal because they have not been approved by the ministry of health. In a recent proclamation, the Central Association of Pharmacists in Czechoslovakia appeals to its members to take the steps necessary for the elimination of most imported pharmaceutic specialties, and requests the cooperation of physicians who prescribe them for their patients.

BERLIN

(From Our Regular Correspondent)

July 14, 1923.

The New Prussian Law Pertaining to Tuberculosis

The bill establishing regulations with regard to the campaign against tuberculosis in Prussia, to which I referred in a recent letter, has just been passed by the Prussian parliament. It was desired by some that tuberculous affections of the lungs and the larynx be made notifiable, but parliament refused to approve this idea, urging as an objection that such general notification would harm the patient from an economic standpoint. However, deaths from such affections are made notifiable. Change of residence of patients suffering from pulmonary or laryngeal tuberculosis must be reported to the authorities. Notification of infections and deaths from contagious pulmonary and laryngeal tuberculosis must be made by physicians without charge; however, the duty of reporting a change of residence rests on the head of the household. In institutions, notification must be made by the superintendent or by some one delegated to perform the task. Notices are not sent to the police station but to the Prussian council of public health. In new cases, notices must be sent within a week; deaths must be reported within twenty-four hours, and infor-

mation of change of residence must be given at once, both the old and new address being stated. Notices may be made orally or in writing. On demand, the authorities will furnish gratis notification cards. Postal charges are borne by the state. When a case of contagious tuberculous infection has been reported, the tuberculosis welfare center comes into action. The state medical bacteriologic laboratories must make a microscopic examination of specimens of sputum sent to them, and must report their findings to the physician; if the findings are positive, they must be reported also to the welfare center having jurisdiction over the case. The local police authorities may disinfect the dwelling of a tuberculous patient, at public expense, if a health officer, the attending physician, or welfare center having jurisdiction make such demand.

The Law in Regard to the Campaign Against Venereal Disease

The bill pertaining to the campaign against venereal disease, which I mentioned recently, has been enacted into law by the reichstag. The *Reichsrat* (council of the empire), which corresponds to the *Bundesrat* (federal council) under the imperial form of government, has, however, in accordance with its constitutional right, taken exception to the law; the principal reason is that the reichstag had modified unfavorably Section 6 of the law. Whereas, according to the original bill, the treatment of venereal disease was permitted only to graduate physicians, the law as modified provides that permission to administer treatment shall be accorded also to persons who are acting under the guidance of responsible physicians. Unfortunately, it is to be feared that the reichstag, which must now reconsider the law, will not recede from its position, and that thus the way will be left open for quacks to treat venereal patients.

Manufacture of Insulin in Germany

Insulin, the pancreatic hormone discovered in America, is to be given a clinical test in Germany. For this purpose, the University of Toronto has appointed a committee consisting of German authorities on metabolism: Krehl of Heidelberg; F. Müller, Munich; von Noorden, Frankfort-on-the Main; Minkowski, Breslau, and Strauss, Umber and Fuld, Berlin, with Minkowski as chairman, to bring about the preparation of insulin in Germany. Until this can be done, the preparation made elsewhere can be put on the market. As a member of the committee suggests in the *Deutsche medizinische Wochenschrift*, conservatism by medical practitioners is necessary until sufficient clinical experience with insulin has been gained, for the use of the remedy is by no means without danger.

Training of Deaf Mutes

Principal Neuert of Heidelberg has of late been investigating the subject of the training of deaf mutes and their choice of a calling or profession. His researches pertain mainly to Baden. His findings may be summed up as follows: 1. By far the greater number of male deaf mutes in Baden take up some handicraft. They are, in the main, shoemakers, tailors, carpenters, goldsmiths, glass painters, printers, lithographers, bookbinders, saddlers and paper hangers. About 25 per cent. of the male deaf mutes are employed in agriculture and gardening. 2. Female deaf mutes make a living, for the most part, as seamstresses and dressmakers. 3. Twenty-five per cent. of the male deaf mutes are married, and about 40 per cent. of those married are independent. A larger percentage of the tailors and shoemakers are married and independent than was found in other crafts. 4. The majority of those married reside in the larger towns. 5. On account of better opportunities for employment, many of the male deaf mutes born in the rural districts gravitate later toward towns of more than 10,000 inhabitants. 6. Since dismissal from the institution for the deaf and dumb, 70 per cent. of the males and 96 per cent. of the females have received no further school training. 7. Of the deaf mutes who received training in some handicraft, 72 per cent. have never passed the test that would admit them as journeymen. 8. Only 4 per cent. of the males have been admitted as "masters." From these findings, which, in view of the comparatively small area covered by the research, cannot be held to apply to the whole country, Neuert draws several conclusions; among others, the following: 1. All deaf mutes, irrespective of the place of birth, after dismissal from the institution for the deaf and dumb should receive further industrial training in proper continuation schools conducted by the state. 2. Such continuation schools, in planning the courses of study, should not only consider the needs of those intending to follow some handicraft but should also provide for the training of the large number of future agriculturists and gardeners, unless for the latter attendance at special agricultural schools should prove feasible. 3. The continuation schools must, as far as location and equipment permit, afford abundant opportunity for contact with the affairs of public and private life. In order to make such contact easier, the occupational training should not be confined to an institution, but many of the pupils should receive practical training in the shops of masters in the craft or trade they are studying. 4. The period of apprenticeship in the various crafts and trades must be at least as long as that required of persons who can hear. 5. The training of each pupil while working in outside shops must be controlled by the teachers of the continuation school. 6. Every deaf mute who has been thus trained in a craft or trade must, after finishing the theoretical and practical course, take the test required for admission as journeyman. 7. Pupils should be encouraged to pass the master's test by giving them, while in the continuation schools, the preparatory courses needed. 8. Especially gifted pupils who take up trades requiring some knowledge of art should be afforded the opportunity to attend a technical school (architecture, industrial art, goldsmithery, carving, etc.). 9. Gifted persons who desire to secure a higher education should be placed in the proper private institutions and if they are lacking in means, they should receive state aid. 10. At every institution for the deaf and dumb, a vocational guidance committee should be appointed to aid pupils and their parents practically in the choice of a trade or occupation.

Marriages

ARTHUR E. MYRICK, Stanford, Mont., to Miss Katherine Rood of Chicago, at Great Falls, Mont., July 27.

MILLARD BRIDGMAN SAVAGE, Norfolk, Va., to Mrs. Esther Lenore Gregory of Washington, D. C., July 9.

SAMUEL P. MCDANIEL, Mountain Iron, Minn., to Miss Golda Rader of Manhattan, Kan., in July.

ROBERT LOUIS GILMAN, Madison, Wis., to Miss Marie Victoria Detzell of Erie, Pa., July 31.

FLORENCE MAE FOWLER, Chicago, to Mr. Emmanuel H. Kuttner of Lombard, Ill., August 4.

PAUL JEAN PENISTON, Makawelia, Hawaii, to Miss Wandee Cheek of Berkeley, Calif., June 26.

HERBERT PAYNE MILLER, Rock Island, Ill., to Miss Glea M. Gray of Portage, Wis., June 30.

THADDEUS PERCE SEARS to Miss Mary Genevieve Fitton, both of Denver, June 21.

JAMES GERARD KRAMER, Akron, Ohio, to Miss Ellen Devitt of Cleveland, June 9.

ANDREW DANIEL SCHICK to Miss Lemma Horne, both of Chicago, July 18.

HELEN F. CRAIG to Mr. James J. Sullivan, both of Denver, June 10.

Deaths

John Wesley Murphy ● Cincinnati; Miami Medical College, Cincinnati, 1891; emeritus professor of otology, University of Cincinnati College of Medicine; member of the American Laryngological, Rhinological and Otological Society and the American Bronchoscopic Society; past president of the American Academy of Ophthalmology and Oto-Laryngology and the Cincinnati Academy of Medicine; on the staff of the Cincinnati General Hospital; aged 67; died suddenly, August 3, of cerebral hemorrage, at his summer home in Pickerel Lake.

John Wallace Scane, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1893; for eight years secretary of the Canadian Medical Association; for many years a practitioner in Vermont; formerly professor of physiology and microscopic anatomy, University of Vermont College of Medicine, Burlington; at one time registrar, and assistant professor of pharmacy, and at the time of his death, May 20, aged 54, assistant dean at his alma mater.

Paul Waterman ● Hartford, Conn.; Cornell University Medical College, New York, 1902; member of the New York Neurological Society, the American Psychiatric Association and the New England Society of Psychiatry; served in the M. C., U. S. Army, in France, during the World War; formerly on the staff of the Bellevue Hospital, New York; aged 46; died suddenly, July 31, of heart disease.

Edward Gerald Griffin, Albany, N. Y.; Albany Medical College, 1901; formerly instructor in surgery at his alma mater; served in the M. C., U. S. Army, during the World War; on the staff of St. Peter's Hospital, where he died, July 23, aged 45, following a long illness.

Pearl Myer Wright, Columbus, Ohio; Ohio Medical University, Columbus, 1906; also a pharmacist; formerly instructor of materia medica, Ohio State University College of Medicine, Columbus; member of the board of health; aged 50; died, July 27.

Glen Edsel Mowery ● Salina, Kan.; University of Kansas School of Medicine, Rosedale, 1920; served in the M. C., U. S. Army, during the World War; county coroner; aged 31; was instantly killed, July 22, in an automobile accident, at Wichita.

Charles Spiller, Willis, Texas; University of Texas Department of Medicine, Galveston, 1904; member of the State Medical Association of Texas; aged 47; was found dead, July 20, as a result of an automobile accident.

Sampson Aloysius Callanan, Boston; Medical School of Harvard University, Boston, 1886; member of the Massachusetts Medical Society; aged 59; died, July 20, at his summer home in Orleans, Mass., of cerebral hemorrhage.

Arthur Cole Dougherty, Newark, N. J.; Medical Department of Columbia College, New York, 1882; formerly on the staff of the City Hospital; aged 66; died, July 19, at his summer home at Greenwood Lake.

O. B. Tucker, Columbus, Ga.; University of the South Medical Department, Sewanee, Tenn., 1899; member of the Medical Association of Georgia; aged 46; died, July 19, of heart disease.

Sarah Elizabeth Coker, Gladwyne, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1908; aged 42; died, July 28, from the effects of poison, presumably self-administered.

Charles Carroll Britt, Philadelphia; Jefferson Medical College of Philadelphia, 1902; for more than eighteen years served as police surgeon; aged 45; died, July 21, of pneumonia.

William F. Silverwood, St. Louis; University of Michigan Medical School, Ann Arbor, 1871; Civil War veteran; aged 85; died, July 26, at the Missouri Baptist Sanitarium, of senility.

Frank Robinson, Lowell, N. C.; Louisville (Ky.) Medical College, 1878; member of the Medical Society of the State of North Carolina; aged 71; died, June 14, of cerebral hemorrhage.

Samuel D. Sledd, Fort Wayne, Ind.; Medical College of Fort Wayne, 1878; member of the Indiana State Medical Association; aged 67; died, July 27, of cerebral hemorrhage.

Herman L. Bartlett ● Norway, Me.; University of Vermont College of Medicine, Burlington, 1891; formerly member of the school board; aged 56; died, July 21, of heart disease.

De Witt Brownell, Potsdam, N. Y.; New York Medical College and Hospital for Women, New York, 1893; aged 62; died suddenly, July 24, of cerebral hemorrhage.

Rose Putiata Kerschbaumer, Los Angeles; University of Berne, Switzerland, 1886; member of the Medical Society of the State of California; aged 63; died, July 27.

William Lawton Allen, Greenwich, Conn.; Medical Department of the University of the City of New York, 1884; aged 63; died, July 22, at the Greenwich Hospital.

John McLurg ● Bay City, Mich.; Trinity Medical College, Toronto, Ont., 1886; M.R.C.S., London, England, 1887; aged 66; died, July 28, following a long illness.

J. R. Dent, Wrightsville, Ga.; Atlanta (Ga.) Medical College, 1895; member of the Medical Association of Georgia; aged 48; died, July 18, of typhoid fever.

Henry Clark Jefferds ● Portland, Ore.; Hahnemann Medical College and Hospital of Philadelphia, 1885; aged 63; died, July 22, of cerebral hemorrhage.

Clifford Elroy Higgins, Wilton, N. H.; Dartmouth Medical School, Hanover, 1884; member of the New Hampshire Medical Society; aged 66; died, July 17.

Alexander H. Miller, Culbertson, Neb.; St. Louis (Mo.) Medical College, 1878; member of the Nebraska State Medical Association; aged 73; died, June 20.

John W. Smith, Hemphill, Texas (licensed, years of practice); aged 78; member of the State Medical Association of Texas; died recently, of senility.

George Evans Means, Wellford, S. C.; Tulane University of Louisiana, New Orleans, 1889; Spanish-American War veteran; aged 57; died, July 16.

Joseph C. Mosshart, Winter Haven, Fla.; College of Physicians and Surgeons, Keokuk, Iowa, 1881; aged 73; died in July, of cerebral hemorrhage.

John Liston Lank, Monongahela, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1870; aged 86; died, July 24, of senility.

Walter Channing Gale, Newton, N. H.; Medical School of Harvard University, Boston, 1872; aged 76; died, July 20, following a long illness.

Ruth M. Wood, Los Angeles; University of Wooster Medical Department, Cleveland, 1880; formerly a practitioner in Nebraska; died in June.

Hamilton Meade, Portland, Ore.; Hahnemann Medical College and Hospital, Chicago, 1883; aged 71; died recently, following a long illness.

William E. McDivitt, Shawnee, Okla. (licensed, years of practice); Civil War veteran; aged 87; died, July 11, of cerebral hemorrhage.

Frances Morris Morris, Boston; Boston University School of Medicine, 1885; aged 72; died, July 15, at the Newton (Mass.) Hospital.

Oliver A. Parfitt ● Nanticoke, Pa.; Jefferson Medical College of Philadelphia, 1915; aged 43; died, July 24, of pernicious anemia.

Herman Pink, Indianapolis; University of Königsberg, Germany, 1874; aged 73; died, July 23, following an operation for gallstones.

Jacob Rutter, Marion, Ohio; Starling Medical College, Columbus, 1882; Civil War veteran; aged 80; died, July 20, of senility.

William Redding Staten, Flint, Ala. (licensed, years of practice); aged 70; was instantly killed, June 5, when struck by a train.

William Henry Fritts ● Philadelphia; Bennett College of Eclectic Medicine and Surgery, Chicago, 1881; aged 64; died, July 22.

Samuel Brumbaugh, Dayton, Ohio; Miami Medical College, Cincinnati, 1881; aged 68; died, July 27, following a long illness.

Samuel J. Ferrill, De Soto, Miss. (licensed, Mississippi, 1887); aged 60; died, July 18, of carcinoma of the pancreas.

William Hunter Steele, Rockingham, N. C.; Bellevue Hospital Medical College, New York, 1874; aged 72; died, July 24.

Orien A. Fischer, Belleville, Mich.; Detroit College of Medicine and Surgery, 1906; aged 46; died, July 25.

Joseph Gaffney Thomas ● Adamstown, Md.; Baltimore Medical College, 1905; aged 42; died, July 23.

John W. Powell, Crawfordsville, Ore.; Louisville (Ky.) Medical College, 1875; aged 73; died, July 19.

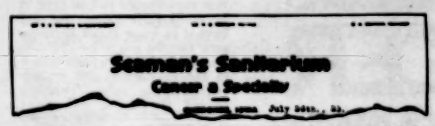
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

SEAMAN'S CHEROKEE SANITARIUM

Court Action Throws an Interesting Light on the Methods of Advertising "Cancer Curers"

In Cherokee, Iowa, one R. C. Seaman conducts a so-called sanitarium devoted to the alleged cure of cancer. The institution is known variously as "Cherokee Sanitarium" and "Seaman's Sanitarium." R. C. Seaman, according to our records, was born in 1878 and was graduated in 1906 by Bennett Medical College, Chicago, receiving his Iowa license the same year. Needless to say, the man is not a member of his local medical society nor, of course, a Fellow of the A. M. A. Connected with R. C. Seaman in the business are



Letterhead used by R. C. Seaman in writing to prospective victims. The "Dr. C. O. Seaman, Retired," whose name appears in the center of the letterhead, is not and never was a physician so far as our records show.

"Dr. C. O. Seaman" who is described as "Retired" and "D. A. Seaman, Manager."

The concern sends out the usual advertising paraphernalia common to the "cancer cure" trade. There is a thirty-two page booklet with a saffron-colored cover bearing the inscription "Cancer Can Be Cured." The cover is reproduced in miniature with this article. Its title page reads: "Liquid Escharotic With Combinations—For the Proper Treatment of Cancers, Tumors, Ulcers, Lupus and Abnormal Growths Without Chloroform or Ether. By Dr. R. C. Seaman." In the introduction, Seaman states that his father was "a cancer doctor for over forty years." So far as our records show, the elder Seaman was not a physician. R. C. Seaman states further that after he had graduated in medicine he took a one-half interest in the "sanitarium" with his father and later assumed complete control of the business.

From material in the Propaganda files, C. O. Seaman seems to have quacked it in the "cancer cure" business for many years. For a time he, apparently, conducted his business from Des Moines, Iowa, and, it would seem, traveled over the country "treating" cancer and, apparently, evading the law by working in connection with a man who had a medical license.

The greater part of the present booklet is given over to the testimonials usual to such publications with pictures of victims before and after "treatment." Some of the pictures show evidence of having been manipulated before the half-tone cuts were made. Besides the booklet Seaman sends out a post-card bearing a picture of the "sanitarium" an old two story frame building and in the foreground a handsome house of the bungalow type described as the "residence of Dr. R. C. Seaman."

SEAMAN GOES TO COURT

So much for the background. Seaman and his business have recently figured in the courts, due to the death of a victim, a Mr. Thomas B. Lee of Deer Park, Wis., from whom Seaman had extracted a promissory note for $1,750. The executor of Mr. Lee's estate objected to allowing the claim and Seaman filed a claim against the estate. The case was heard before a court and jury in the Circuit Court, St. Croix County, Wis. This court, after hearing the evidence, gave judgment in favor of the estate and against Seaman. Thereupon Seaman carried the matter to the Supreme Court of Wisconsin. This body, in a divided opinion, reversed the opinion of the lower court on a technicality and granted a new trial.

This is but an outline of the matter. The facts, as brought out in the case, seem to be that Mr. Lee, who was suffering from cancer, went to the Mayo Clinic, where on July 5, 1920, he was told that his case was hopeless. On the day following, he went to Cherokee, Iowa, where he saw R. C. Seaman.

CONTRACT MADE WITH HOPELESSLY ILL CANCER PATIENT

Thereupon Lee entered into a treatment contract with Seaman to whom he gave his note for $1,750. The contract itself read as follows:

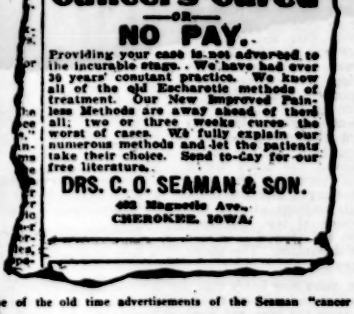
"CHEROKEE, IOWA, July 6, 1920.

"This article of agreement, made and entered into this above date between Dr. R. C. Seaman, resident of Cherokee, Cherokee county, Iowa, party of the first part, and Mr. Thomas B. Lee, resident of Deer Park, county of St. Croix, state of Wisconsin, party of the second part witnesseth:

"First party [R. C. Seaman], by these presents, agrees to treat cancerous growth in submaxilla gland and lower lip of Thomas B. Lee, and try his very best to effect a permanent cure of same by this first treatment. If party under treatment ever needs retreatment, first party will retreat same as many times as necessary for this one price, providing party under treatment will return to the sanitarium as soon as they know it is necessary. Party under treatment by these presents agrees to comply to directions and rules of first party's treatment and sanitarium.

"Second party [Mr. Lee] promises to pay first party ($2,000) two thousand dollars cash for the above-mentioned treatment as follows, to wit: ($250) two hundred fifty dollars in advance, the receipt being hereby acknowledged, and ($1,750) seventeen hundred fifty dollars on or before leaving sanitarium, cash or note, and going price for room and board while at the sanitarium and $5.00 for every four bottles of blood purifier used by him after leaving the sanitarium. DR. R. C. SEAMAN, First Party. THOS. B. LEE, Second Party."

This contract, as will be noted, was made July 6, 1920. At the time Mr. Lee entered into the contract he paid Seaman $250. When Seaman brought suit he filed a claim for the remainder of the note. When Mr. Lee made this contract there was no witness present in his behalf; R. C. Seaman, however, called in his advertising manager, D. A. Seaman, as


Cancers Cured
—OR—
NO PAY.
Providing your case is not advanced to the incurable stage. We have had over 30 years' constant practice. We know all of the old Escharotic methods of treatment. Our New Improved Painless Methods are away ahead of them all; two or three weeks cures the worst of cases. We fully explain our numerous methods and let the patients take their choice. Send to-day for our free literature.
DRS. C. O. SEAMAN & SON.
402 Magnolia Ave.,
CHEROKEE, IOWA.

One of the old time advertisements of the Seaman "cancer cure" outfit.

a witness. When D. A. Seaman went on the stand, he declared that no verbal representations or promises regarding the case were made by Dr. Seaman other than those contained in the contract.

No better summing up of this case can be given than that made by Mr. Justice Crownhart who with Messrs. Justices Jones and Eschweiler dissented from the majority decision of the court. We give Judge Crownhart's dissenting opinion in full:

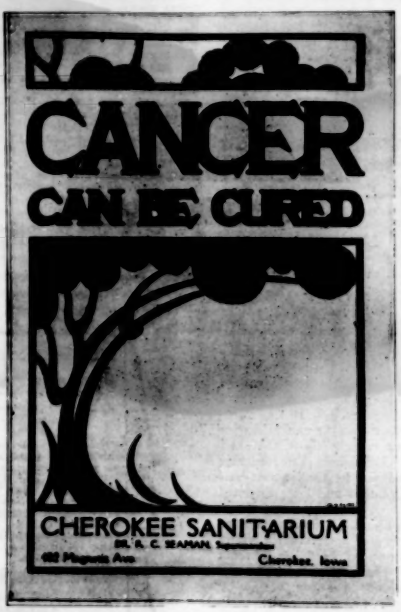
"I agree with Mr. Justice Jones that the judgment of the circuit court should be affirmed. Let us briefly state the facts: The plaintiff [Dr. R. C. Seaman] filed a claim against the estate of Thomas B. Lee, deceased, consisting of a note of said Lee to plaintiff for $1,750, balance for board $3, and

$1.50 for three shaves, total $1,754.50, whereupon defendant filed objections to said claim setting up in substance: That said Lee died at Cherokee, Iowa, on the 2d day of September, 1920, from the effects of a cancer; that on the 5th of July, 1920, he consulted the Mayo Clinic at Rochester, Minn., and was advised that there was no hope of recovery; that on the next day he went to Cherokee, where he met the plaintiff, who represented to said Lee that he could cure him of the cancer; that thereupon the plaintiff signed a treatment contract and the note in question; that the plaintiff failed to perform his contract in accordance with its terms; and that Lee paid the plaintiff $250 in cash at the time he entered into the contract. The defendant thereupon asked that the claim be disallowed.

"I STAND FOR JUDGMENT; ANSWER: SHALL I HAVE IT?"

"The case came to trial in the circuit court before a court and a jury, upon the claim and the objections thereto. The plaintiff introduced in evidence the note in question, computed the interest thereon, and rested his case. The defendant thereupon moved for a nonsuit, and the plaintiff asked leave to reopen his case, which was granted. The plaintiff was called as a witness, and testified to the effect that he was the owner of the note, and that it had been in his possession since the signing, and to further prove his case he introduced the deposition of one D. A. Seaman, who was 'getting out literature for Dr. Seaman' at the time, showing that he was present at the execution of the note and treatment contract, and saw them signed, the treatment contract being identified as Exhibit A, and the note as Exhibit B. Exhibit A, the treatment contract, was first signed, and then Exhibit B, the note, was signed by Lee. No one was present but the plaintiff, Dr. Seaman, and the witness D. A. Seaman. The defendant then read from the deposition of D. A. Seaman to the effect that the treatment contract was signed; then the note was signed immediately following the contract, and thereupon defendant offered in evidence Exhibit A, being the treatment contract, which was received without objection.

"Then both parties rested and moved the court for a directed verdict. The jury was discharged and the court made its findings of fact and conclusions of law, dismissed the case, and entered judgment for the defendant. The plaintiff appealed.



Reproduction (greatly reduced) of the cover of the advertising booklet sent out by R. C. Seaman in drumming up trade. It is a lurid affair printed in two colors on saffron-colored paper.

"This court now holds that the decision of the lower court was correct and without error, on the case as made before it, but reverses the case and sends it back for a new trial pursuant to section 2405m. Stats., which provides that this court may, when 'it is probable that justice has for any reason miscarried,' or if it 'shall be deemed necessary to accomplish the ends of justice,' grant a new trial in its discretion, even though there are no errors in the record, and the judgment should be otherwise affirmed. The statute lays down a rule of equity to soften the rigors of the law.

AN "UNCONSCIONABLE AND EXTORTIONATE" CONTRACT

"Now we come to the question whether or not from a fair consideration of the facts in the case 'it is probable that justice has for any reason miscarried' or a new trial should be 'deemed necessary to accomplish the ends of justice.' I cannot bring myself to believe that this is a case where the conscience of this court should be moved to favor the plaintiff by granting a new trial. I can see no inadvertence of the plaintiff in the trial, but, on the contrary, it is perfectly plain to me that the plaintiff deliberately chose his ground for his contest in the court below. He sought to prove his case by the introduction of the note alone, and to rest upon the presumption of consideration. He stood upon his bond. He was a 'stony adversary.' He craved the law. He pleaded not for equity or justice. He endeavored to disregard the treatment contract as immaterial, and it would seem for good reason. The treatment contract on its face shows that it is unconscionable and extortionate. It is such a contract as no reputable physician would be likely to make under the circumstances. It is set forth in full in the opinion of the court.

"Here is a man sick unto death, who applies to a doctor for treatment, probably as a result of the work of D. A. Seaman in 'getting out literature for Dr. Seaman.' On the face of the contract it appears that the sick man had a cancerous growth of the lower lip reaching into the submaxillary gland, and the plaintiff was to do 'his very best to effect a permanent cure of same by this first treatment.' Here is a fairly implied representation that the plaintiff would probably cure the deceased man by a single treatment. However, it is represented to him that, if he needs re-treatment, he may have it as many times as necessary for the one price ($2,000), providing the party will return to the sanitarium and comply with all the rules, including paying the going price per week, weekly in advance, for board and room, which price is not given in the contract, and that the patient shall pay '$5.00 for every four bottles of blood purifier used by him after leaving the sanitarium.' In the absence of any testimony of the doctor showing what treatment he gave this man, the doctor being present at the trial, it may fairly be presumed from the contract that he treated him with his 'blood purifier.' The note which he took from his patient bears interest at 8 per cent., and provides that, in case of proceedings for collection, attorneys' fees shall be allowed.

DISHONORING A NOBLE PROFESSION

"A hard contract, indeed! What happened? The sinking man, grasping at straws, signed the note and contract, stayed on at the sanitarium less than two months, and died. It seems to me too plain to admit of controversy that the plaintiff took advantage of his patient's unfortunate condition to make an unconscionable and overreaching contract. A doctor stands in a fiduciary or confidential relation to his patient, and this court need exercise no undue sympathy with one who dishonors a noble profession by oppression and extortion.

"It seems to me to be a perversion of the statute to grant a new trial in this case on the ground stated in the statute that 'it is probable that justice has for any reason miscarried,' or 'to accomplish the ends of justice.' It gives the plaintiff who comes into the court with unclean hands another chance to mulct the estate of his victim. The statute was not intended for any such purpose. It was intended to reach those cases which appeal to the conscience of this court as being cases where justice has not been done, and hence requires a new trial in equity and good conscience.

"It must be noted that one party to this contract is dead. His mouth is closed. He may not disclose on the trial what happened at the making of this extraordinary contract. Only the two Seamans are witnesses to testify. Further, I think it sufficiently appears that the deceased had a manifestly

incurable disease at the time he came to Dr. Seaman. I think the contract carries with it a clear implication that the deceased, for a consideration of $2,000, would be cured. Such a contract is against the public policy of our laws, and should not be enforced in our courts. Section 1436f, Stats.

"For the above reasons, I respectfully dissent from the decision of the court."

Under the majority decision of the Supreme Court of Wisconsin, R. C. Seaman has the opportunity once more to file claim against the estate of Mr. Lee. It will be necessary, however, for Seaman to offer proof of performance of the contract into which he entered with the poor fellow who was dying of cancer. Will he do it?

Correspondence

"THE RELATION OF MEDICAL EDUCATION TO THE MEDICAL PLANT"

To the Editor:—The description of the new combined medical school and hospital of the Vanderbilt University, and the drawings accompanying the article by Dr. Robinson (THE JOURNAL, July 28) are interesting. They have raised certain questions and reflections in my mind which I am asking you to be good enough to publish.

Dr. Robinson describes and illustrates in most interesting fashion the new buildings of the Vanderbilt University Medical Department, which are to combine the medical school, laboratory, library and hospital. The new buildings are to be located on the main campus, although this means "abandonment of valuable buildings and land now occupied by the Vanderbilt Medical School." Moreover, he tells us that the hospital will accommodate approximately 170 beds, a number which he states is small for educational purposes; but, he adds, "It constitutes a hospital as large as can well be maintained by the funds available for this purpose." The hospital wards are so constructed that additional stories can be constructed, one for pediatrics above the medical ward and one for obstetrics over the surgical ward. "Ground for further extension of both hospital and laboratories toward the west is available, so that a plant three times the size of the one now planned can be accommodated."

The buildings are planned to accommodate fifty students in each class, and the facilities of the school have been planned accordingly. Dr. Robinson considers it fortunate that a limit is placed on the number of students by a definite physical limitation, for, he says, "It is essential to have a comparatively small number in order to carry out many present-day American educational ideas." And then he concludes his whole article with these significant words: "Whether these ideals are true or false perhaps the future will show."

I recently visited the Vanderbilt University and was informed by a reliable medical man of that city that the limitation of the number of the entering class of the University of Nashville to fifty will mean that something like 150 well qualified young men will be denied by the Vanderbilt University an opportunity to pursue their medical education within the walls of that institution. And so I am wondering where these hundred and fifty young men will go. Perhaps a few of them will enter other Grade A schools, and others will enter Grade B schools. Doubtless some will abandon the idea of studying medicine. It may be that a few misguided youths may enter the chiropractor schools. But whether the number of men who will be refused admission to the Vanderbilt medical school be larger or smaller than the number I have given, I am wondering what Dr. Robinson will say to the well qualified young men who are denied admission to the university. I believe his answer to this question would interest many of the readers of THE JOURNAL.

These splendid new buildings and their endowment are provided by a gift of $8,000,000 from the General Education Board and the Carnegie Foundation. The interest on $8,000,000 at 5 per cent. is $400,000 a year. If this is divided among 200 students, it will be seen the cost of educating these students is $2,000 a year provided by the school itself. But I assume that the student will be called on to pay some fees, so the cost of educating each of these 200 students would be considerably in excess of $2,000 each—this to carry out "our present-day American educational ideas," which Dr. Robinson admits the future must reveal as to whether they are true or false.

But if they are true, then the medical school of the Vanderbilt University is setting a standard of what must be expected in other medical schools of America; then all our medical schools must be endowed like the Vanderbilt University if they are to provide medical education which shall not fall below the requirements of the day. The situation is a peculiar and puzzling one which I myself am totally unable to solve, even to my own satisfaction. Further, the expense of the present plan of the Vanderbilt University is, we are advised, such that the hospital is smaller than it should be because of lack of funds. This means that already the Vanderbilt University, with its splendid endowment, needs more money and is cramped because of lack of funds.

THEODORE DILLER, M.D., Pittsburgh.

[The letter was referred to Dr. Robinson, who replies:]

To the Editor:—The letter of Dr. Theodore Diller calls attention to two problems of medical education which are among the most serious that have to be faced at this time. They are the numerical limitation of students and the high cost of medical education.

The limitation of the number of students is a problem now being faced by many of the Grade A schools. As a matter of fact, Vanderbilt University does not at present admit nearly all the properly qualified students that apply for entrance to the medical school, and has not done so for several years. The university acts on the principle, as do the medical schools of the United States generally, that it admits only the number of students which it can properly teach and train. This problem is not local, nor is it a condition arising from the fact that Vanderbilt University is to have a new medical plant. The number of qualified students that any one school refuses to admit, however, does not correctly indicate the number of students unable to obtain a good medical education, as it is a well known fact that today many qualified students make application for admission to several schools, so that they may be admitted to one if refused admission to others.

The question of providing adequate facilities for all students qualified to study medicine is a large one, the discussion of which would carry us far afield. The fact remains, however, that at present many medical schools are refusing admission to qualified students, because they are unwilling to exceed their educational facilities. Vanderbilt University has adopted this principle. The best qualified students are admitted, as far as this selection can be made. This procedure is one factor in elevating our American standards of medical education, and puts a premium on meritorious achievement during the premedical course.

The high cost of medical education is also not a local problem with Vanderbilt University. In regard to the cost per student, Vanderbilt University is not "setting a standard of what must be expected in other medical schools of America." The standard is already set, and many schools, with their

affiliated or owned hospitals, have resources represented by plant, equipment and interest-bearing funds far in excess of Vanderbilt University. Of the $8,000,000 available for medical education, Vanderbilt University will have to withdraw at least $2,000,000 for building purposes. There will remain $6,000,000, which, at 5 per cent. interest, will yield $300,000 a year. It is considered that $100,000 will be required as a minimum for the conduct of a thorough modern teaching hospital, and that $200,000 plus student fees can be devoted to the medical school proper. It is to be expected that the hospital will confer benefits on its patients, and so not all costs should be charged up against the medical students, as Dr. Diller has done.

The study of budgets of teaching hospitals and medical schools in this country will convince any one that Vanderbilt University must make a rather modest beginning, even with so large a sum of money at its disposal, and attempt to build a medical school on well considered lines, which may lay the foundation for expansion and development in the future. An increase in the number of students that may be admitted to the medical school in the future is one of the problems that have been considered in planning the buildings.

Economy of construction and of operation is another problem that has been borne in mind in planning to bring the hospital and laboratories together. This idea has also influenced the authorities of the University of Colorado, in working out their new plans simultaneously with us, and of the University of Rochester, who have adopted similar plans.

The medical profession may look askance at the present-day cost of medical education, but I am sure that this problem has not been so sharply and painfully borne in on them as it has on those actually engaged in the administration of funds devoted to this purpose.

Dr. Diller has apparently misunderstood the meaning of the last sentence of my paper, which reads: "Whether these ideals are true or false perhaps the future will show." This statement refers only to carrying out present-day American ideas of teaching, which are in definite contrast to the methods of Europe, where many more students (over two thousand at Edinburgh, for instance) are taught in a single school, and where individual training is not so thoroughly attempted. This contrast was sharply brought out by a study of teaching methods that I made during the past year in Denmark, Germany, Holland, England and Scotland. I am convinced of the superiority of our American methods, which would suffer immeasurably if we should attempt to teach the large numbers at one time as is done in many of the European schools.

G. Canby Robinson, M.D., Baltimore.

TREATMENT OF POISON IVY DERMATITIS

To the Editor:—A perusal of Dr. Tieken's article in *Hygeia* on poison ivy and its treatment causes me to give my experience with the poisonous sumacs and their treatment. I have found melted wax to afford instant relief from pain, burning and itching in young and old, even with severe involvement of the rectal and vaginal mucosa. The course of the dermatitis is much shortened. A simple and easy method is to use a small swab with cotton and paint the parts with the melted wax. There is no danger, of course, from burning. With closed eyes the whole face may be painted. The least entrance of air beneath the mask or cast of wax necessitates sealing in the weakened part. I know from personal experience the instant relief from pain, burning and itching and the return of sleep which is so grateful to the patient, to say nothing of the lessened loss of valuable time and money.

Don P. Flagg, M.D., Los Angeles.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HYSTERICAL TYPE—LEVEL OF NERVOUS SYSTEM

To the Editor:—1. What manifestations characterize the hysterical type of personality? 2. What is the psychologic conception of the term "level"? Please define the terms psychologic, sociological, physiologic-anatomic level and the level of the central nervous system, and give the type of reaction or the "instrument" used at each of these levels. Are the various levels epochal or arbitrary in their delimitation? Any other information you can give to assist in a clear understanding of the rather complex nature of "levels" will be gladly received.

Albert Anderson, M.D., Raleigh, N. C.
Superintendent, State Hospital, Dix Hill.

Answer.—1. Briefly stated, the chief characteristics of the hysterical personality are: self centering of interest, exaggerated suggestibility and lability of affect. Detailed descriptions and discussion can be found in books on psychoneuroses, such as those of Dejerine and Gauckler, and Donald E. Core, or in recent textbooks on nervous diseases.

2. Hughlings Jackson subdivided the activities of the nervous system into levels, using the terms lowest, middle and highest to describe three levels represented by the peripheral nerves and their centers, the corticospinal paths, and the cerebral association (or psychic) pathways, respectively. These levels correspond to different stages in evolution. In recent years, psychiatrists, notably Jelliffe and White, have used the term level in much the same sense. These authors (Diseases of the Nervous System, Philadelphia, Lea & Febiger, 1923) formulate three levels: Vegetative or physicochemical, in which the effective tool (or reaction mechanism) is of the type of a hormone. The controlling nervous mechanism is the autonomic system including sympathetic and vagus groups; sensorimotor or reflex, the tool being the reflex; and psychic or symbolic, the tool being the symbol (e. g., words). A very similar grouping has been made by Adolf Meyer (Interrelations in the Domain of Neuropsychiatry, *Arch. Neurol. & Psychiat.* 8:111 [Aug.] 1922). The sociological level is the higher stage in the psychic level in which the reactions concern not only the individual organism but also the modifications brought about by its relations with other individuals in the social group. Presumably our correspondent's terms "physiologic-anatomic" correspond with the vegetative level. Under certain circumstances a man may react with primitive anger (at the reflex and vegetative levels), or he may go to law to secure punishment of a rival (reaction at symbolic and sociological levels).

SODIUM IODID FOR GOITER

To the Editor:—With regard to the administration of sodium iodid in drinking water for prevention of adolescent goiter, will you please explain more fully. How do you administer the 3 grams, all at once or in a certain amount of drinking water to be taken during the day? Will you suggest a prescription whereby I could give a patient enough for one week to take at home, returning for the other week's treatment, of course. I have to carry most of my own drugs, but could get a good pharmacist in the next town to compound the prescription for me. There is a lot of goiter in this vicinity.

M. B. Stripling, M.D., Burton, Neb.

Answer.—Marine and Kimball (*Arch. Int. Med.* 25:661 [June] 1920) employed 2 gm. of sodium iodid given in 0.2 gm. doses daily for ten consecutive school days. This was repeated twice yearly. It could be prescribed in solution, a dose to a teaspoonful of some flavoring vehicle, for example:

	Gm. or C.c.
℞ Sodium iodid	2
Aqueous elixir of glycyrrhiza (N. F.)	50
M. Label: Teaspoonful in milk once daily.	

For administration in powders, potassium iodid is preferred to sodium iodid, as the latter is deliquescent. Marine and Kimball (The Journal, Oct. 1, 1921) admit, however, that this amount of iodid is excessive, and that 1 gm. distributed over a longer period would be better.

In Switzerland, where goiter prophylaxis is a national problem, certain cantons arrange for the addition of 0.5 gm. of potassium iodid to 100 kg. of cooking salt. This mixture is sold at the same price as ordinary salt. The quantity of iodid consumed in this manner is about 0.1 mg. daily. Some

such plan is probably the most practical method of goiter prophylaxis. If the patient is furnished with a small quantity of potassium iodid—say, 1 gm.—and advised to mix it thoroughly with 1 kg. of ordinary table salt for occasional seasoning of his food at the table, he will get all the iodid necessary for prophylactic purposes and in an entirely unobjectionable manner. A more elaborate method for the administration of iodin with food has been outlined by Arthur D. Hirschfelder, "A Simple Method for Administration of Iodids in the Food in Goitrous Regions" (THE JOURNAL A. M. A., Oct. 21, 1922). See Current Comment, this issue.

TREATMENT OF EXCESSIVE PERSPIRATION

To the Editor:—Please discuss the causation and suggest treatment for excessive sweating of the shoulders and back. There is no history of any tuberculosis or syphilis. The patient is a girl, aged 16, with enlarged tonsils. She will start sweating after arising in the morning, and the sweat is so profuse that it drips off her back as if some one had thrown a bucket of water on her. There is not any sweating while sleeping. G. C. R., M.D., Henryetta, Okla.

ANSWER.—Instances of localized hyperhidrosis are not rare. The usual sites are the palms, soles, axillae, face and back, but the condition may occur anywhere. It may be either congenital or acquired. In some cases the disturbance is due to lesions of the central nervous system, as brain tumor or injury to the cord. In others, injury to peripheral nerves produces hyperhidrosis directly or reflexly, and a functional sensory disturbance, as neuralgia, may be accompanied by hyperhidrosis of the area supplied by the affected nerve. In most cases there seems to be purely a neurotic base for the condition, attacks of sweating being induced by peculiar tastes or odors, fright, worry or excitement, and Marie has described a case in which the sweating was under control of the patient's will.

The diagnosis of the condition is simple, as the affected area shows no other change than occasional slight redness or a sodden appearance. With a hand lens, the sweat can be seen as it is secreted through the sweat ducts. The prognosis is variable, although the condition can usually be relieved considerably.

From the standpoint of treatment it is essential that the patient's general condition be investigated and any defects corrected, if possible. Alcoholic liquors, tea, coffee and other things that increase sweating should be avoided. The environment and habits should be arranged to avoid mental stress as far as possible. Direct treatment may be carried out by the use of one of the drugs commonly used to suppress sweating. The one most generally used is a 10 to 25 per cent. solution of aluminum chlorid, and care should be taken that it is not used to the point of producing dermatitis. The method offering the greatest possibility of cure is undoubtedly roentgen-ray treatment. This should be employed in subintensive or fractional doses, and the production of an erythema avoided.

TREATMENT OF GROUND ITCH

To the Editor:—What is the most up-to-date treatment for grand itch—one that will probably destroy the parasite?

E. M. THOMAS, M.D., Prattville, Ala.

ANSWER.—We do not know what our correspondent means by grand itch, and presume that he means either grain itch or ground itch. But the name itch, with some qualification, such as Philippine or Cuban or elephant, is so common that in this we may be mistaken.

The dermatitis resulting from infestation with *Pediculus ventricosus*—the organism of grain itch—usually responds readily to the application of soothing powders or lotions, although Schamberg found ointments containing sulphur and balsam of Peru in percentages less than those used in scabies useful. The clothing should be sterilized by steam, dry heat or sulphur fumes, and if a straw mattress is the source of infection, it should be destroyed. The literature does not show any recent changes in the methods of treatment.

The local treatment of ground itch (hookworm itch) is essentially that of an acute dermatitis from any cause, with especial attention to the prevention of secondary infection, or to treatment of the latter if it occurs. If seen early, the condition is usually relieved promptly if the parts are painted with turpentine or treated with wet dressings of a 1:8,000 solution of mercuric chlorid. In later lesions, the vesicles and pustules should be opened and cleaned with a 1 per cent. to 4 per cent. phenol (carbolic acid) lotion, and the whole area dressed with 1:8,000 mercuric chlorid solution.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, September 4. Sec., Dr. Harry C. De Vighne, Juneau.

MASSACHUSETTS: Boston, September 11-13. Sec., Dr. Charles E. Prior, Room 144, State House, Boston.

NEW HAMPSHIRE: Concord, September 13-14. Sec., Dr. Charles Duncan, Concord.

NEW YORK: Albany, September 24. Sec., Dr. William D. Cutter, Albany.

BRIDGING THE CHASM BETWEEN THE FUNDAMENTAL AND THE CLINICAL BRANCHES IN MEDICAL SCHOOLS*

J. A. MYERS, PH.D., M.D.
MINNEAPOLIS

At the present time a great deal is being said about medical school curriculums; it is stated, particularly, that changes should be made in the nature of elimination of certain phases of the work in the fundamental subjects. Such changes would bring the clinical subjects nearer the freshman year; in fact, many argue that such subjects should be introduced in the freshman year. To eliminate any material part of the fundamental subjects for the purpose of starting clinical branches earlier should be likened to the building of the house on the sands. Likewise, in the clinical years there is little excuse for omitting much work now being given. It is true that both the fundamental and the clinical teaching in many medical schools could be modified considerably with great profit to all concerned.

Upper classmen in our medical schools exhibit an astounding lack of knowledge as regards fundamental subjects. This has led often to a statement by clinical men that the fundamental subjects are not well taught. If the same clinical men will test the knowledge of their students from three to five years after they themselves have taught certain subjects, they will find that their students have not retained all that they were taught.

It has been argued that no one who does not hold a medical degree should be allowed to teach in a medical school. I should like to ask whether there is any more justification in requiring teachers of anatomy and physiology to hold medical degrees than the teachers of such premedical subjects as physics and organic chemistry. It is quite probable that the time is far distant when the latter group of subjects will be taught by medical men. It is probable also that the time is not near when anatomy and physiology will be taught entirely by men holding medical degrees. I have encountered many excellent teachers among the men who do not hold medical degrees. On the whole, anatomy and physiology are well taught in our medical schools. I am firmly convinced, therefore, that the vital question is not who shall teach the medical student the fundamental subjects but how he can be given more practical knowledge of these subjects before graduation. The answer to this question is: by teaching more anatomy and physiology in our medical schools.

In many schools, the student takes most of his anatomy during the freshman year. Any further courses are taken of his own free will. In some schools there are advanced courses in anatomy, such as special dissection, applied anatomy and topographic anatomy, and the student may elect

* From the Department of Internal Medicine and the Department of Preventive Medicine and Public Health, University of Minnesota Medical School.

them if he sees fit. Unfortunately, in the first place, the importance of the fundamental subjects is not sufficiently impressed on the student. He often comes to look on them as something to be gotten out of the way, and, as soon as a passing mark is received, he draws a sigh of relief and sometimes even boasts that he can now drop these "things" from his mind and take on something "practical." In the second place, the curriculum is often so crowded with required courses that the student does not have time for elective courses which require as much preparation as those in anatomy and physiology.

The student who is familiar with the fundamental subjects usually finds little difficulty in the clinical subjects. With him it is largely a matter of technic, learning of symptoms, and elicitation of signs. However, many of the students who enter the clinical years know so little of the practical application of the fundamentals that conscientious clinical instructors find it necessary to devote much time to teaching them normal findings. The clinical instructor who is not conscientious proceeds with the findings in disease, and the student finds himself in an almost hopeless tangle, trying to differentiate between the normal and the abnormal. When one considers the attitude of the freshman student toward the fundamental subjects, together with the time that often elapses between these subjects and the clinical studies, one is not surprised at the lack of knowledge on the part of upper classmen. Therefore, I do not believe that the blame in any part can be placed on our present teachers in the fundamental branches.

Before the seventeenth annual meeting of the National Tuberculosis Association, Bushnell pointed out that during the period of the World War, when many physicians were being trained for special work in diseases of the chest, there was exhibited a tremendous lack of knowledge of the normal chest, and before he could use these physicians advantageously he was compelled to train them in the findings of the normal living chest. These remarks were confirmed by other prominent physicians. Speaking before the ninth session of the Mississippi Valley Conference on Tuberculosis, held in Columbus, Ohio, Dr. Haven Emerson, as medical adviser of the United States Veterans' Bureau, stated that some men, posing as specialists in diseases of the lungs, do not know even the usual number of lobes in each lung. At the same meeting, Dr. Henry Page, dean of the University of Cincinnati Medical School, spoke at some length on the necessity of knowing the normal chest.

So uniform is the feeling among chest specialists of this country that a knowledge of anatomy is of tremendous importance to the clinician, that the National Tuberculosis Association recently granted Dr. William Snow Miller of the University of Wisconsin a considerable sum to be used for the express purpose of investigating the anatomy of the lungs.

It is logical to assume that the lack of knowledge of practical application of the fundamental subjects is not peculiar to the chest specialists, but that it exists in most groups of specialists. If this is true of specialists, how much more true it must be of the men in the general practice of medicine.

Certainly, it is agreed that every prospective practitioner of medicine should have a course involving considerable detail in the dissection of the human body; he should be taught histology in considerable detail; he should have a course in human embryology that gives him knowledge, not only of the normal development of organs and systems, but also of the development of anomalies which later may be of considerable clinical significance. A course in the embryology of the chick will not suffice; he should be taught physiology and physiologic chemistry in considerable detail; he should be given thorough training in pathology.

In addition to the detailed courses in anatomy and physiology, offered in the freshman and sophomore years, short courses in clinical anatomy and clinical physiology should be required of the upper classmen. In fact, the fundamental subjects are so important that I am convinced that no school year should pass without the student being examined carefully over these subjects one or more times.

Bevan's recent investigation showed that there is at present only favorable criticism of the methods of teaching bacteriology and pathology.

Too frequently, clinical teaching is poorly done. Not a small percentage of the individuals offering clinical subjects in many medical schools are teachers neither by birth nor by training; they appear before their classes with little or no preparation, and they hold their positions primarily for the prestige they derive for their private practice. On the other hand, there are some excellent clinical teachers in every first class medical school.

In the clinical years, it is often argued that beneficial changes could be made in the apportionment of time to various subjects and diseases. For example, one group of students argued that it is wrong for them to be compelled to spend a long time in the study of a disease that exists ordinarily only in foreign countries, and have a disease that causes the death of one in every eight or ten persons throughout the world dismissed with two or three lectures. In fact, one group of recent graduates stated that they did not receive a single lecture on the subject of tuberculosis. In general, it might be said that less emphasis should be placed on rare conditions, and an attempt made to make the student thoroughly familiar with such common conditions as cardiac disease, tuberculosis and cancer, with the technic of the common surgical operations and obstetrics, and with the methods of protecting the public against disease.

Admitting that there are certain minor alterations desirable in the teaching of both the fundamental and the clinical branches, I am convinced thoroughly that the great mistake in medical school curriculums lies in the fact that we have not bridged well the chasm that exists between the fundamental and the clinical subjects. The first courses in anatomy and physiology are taught as pure sciences, and rightly so. When these courses are completed, the students have much information covering the structure and function of the various parts of the human body, but they have not been taught how to examine these normal structures from the surface. From the surface, information concerning an organ is elicited with much more difficulty than when one is able actually to hold and dissect the organ.

The same students next find themselves in dispensaries and hospitals examining organs to detect disease. They are told that certain sounds heard over the apex of a lung are very suggestive of minimal tuberculosis; that certain sounds over a basal pulmonary lobe indicate beginning pneumonia; that a certain sound over the heart is indicative of mitral insufficiency; that certain things felt in the abdomen and studied by means of the roentgen ray indicate certain abnormal abdominal conditions. All of this and more the student is told, but he has little or no knowledge of how these sounds heard and the structure felt differ from those normally elicited over the same areas. In other words, he has had no normal standards set up for comparison. The result is that many of the seeds sown by clinical teachers never germinate. It is not uncommon to hear recent graduates of medical schools state that they rarely feel sure of their physical findings over certain organs. They admit that they have been given ample opportunity to learn, but, with no normal comparative standards, have been unable to grasp and retain the points their instructors tried to teach them.

This tremendous loss of energy can be avoided in great part by teaching the student physical and roentgen-ray findings of the living normal human body at the time, or just before, he has finished his training in the fundamental branches. He should be taught the technic of making a physical examination and should be made thoroughly familiar with inspection, palpation, percussion, auscultation and roentgen-ray findings of the normal chest. The same should be true of the normal abdomen and pelvis, the extremities, and the head and neck. I would advocate strongly that no student be permitted to enter the clinical branches until he could demonstrate on practical examination a satisfactory knowledge of the physical and roentgen-ray findings of all important parts of the normal living body.

This method has been in practice in part for the last two years in the University of Minnesota Medical School. Although it has been described in considerable detail elsewhere,[1] it consists essentially of permitting sophomores to elect a course in physical and roentgen-ray findings of the normal chest. Since this course was introduced, it has been offered for four quarters, and the number of students electing it has increased from six during the first quarter to thirty the fourth quarter. This course has been made prerequisite to an elective course on the diagnosis and treatment of diseases of the lungs, and actual observation has proved that the students who have had the work on the normal chest are able to acquire fully twice as much clinical knowledge in a given length of time as those who have not studied the normal chest.

From these observations, I am convinced that bridging the chasm between the funamental and clinical branches will solve many of the difficulties now encountered in medical school curriculums, and will be productive of a more efficient group of general practitioners of medicine.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1. Anatomy, including embryology and histology	14	–18½%
2. Physiology	4½– 6	%
3. Biochemistry	3½– 4½	%
4. Pathology, bacteriology and immunology	10	–13 %
5. Pharmacology	4	– 5 %
6. Hygiene and sanitation	3	– 4 %
7. General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20	–26½%
8. General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13	–17½%
9. Obstetrics and gynecology	4	– 5 %
	76	– 100%
Electives	24	– 0 %

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The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street, Chicago.

Hospital Intern Year

Twelve medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School	1910-11	1915
Stanford University School of Medicine	1914-15	1919
Rush Medical College (University of Chicago)	1914-15	1919
University of California Medical School	1914-15	1919
Marquette University School of Medicine	1915-16	1920
Northwestern University Medical School	1915-16	1920
University of Illinois College of Medicine	1917-18	1922
Loyola University School of Medicine	1917-18	1922
Detroit College of Medicine and Surgery	1919-20	1924
University of Nebraska College of Medicine	1922-23	1927
General Medical College	1923-24	1928
College of Medical Evangelists	1922-23	1927

The hospital intern year has been adopted as an essential qualification for the license to practice in ten states, becoming effective in different years, as follows:

State Board of	Affects Students Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1917
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1918-19	1923
Michigan	1917-18	1922
Iowa	1918-19	1923
Delaware	1923-24	1928

1. Myers, J. A.: An Experience in Teaching Medical Students the Findings in the Normal Chest, Am. Rev. Tubere., to be published.

Book Notices

THE OPHTHALMOLOGY OF GENERAL PRACTICE. By Malcolm L. Hepburn, M.D., F.R.C.S., Surgeon, Royal London Ophthalmic Hospital. Cloth. Price, $4. Pp. 184, with 49 illustrations. New York: Paul B. Hoeber, 1923.

This is a brief work designed to save the general practitioner the time and trouble of reading through larger treatises on ophthalmology for the diseases and conditions he may meet. It is an attempt to give him the essentials of practical ophthalmology from the clinical standpoint, with little or no consideration of the theoretical and anatomic principles involved. The attempt is a success, and the little volume should be received favorably by those for whose benefit it is written. There are four colored plates illustrating twenty-four of the commoner external diseases of the eye, and four illustrating sixteen fundus conditions. The author's style is at times heavy and is not always as clear as might be desired. In the first chapter, the equipment necessary for conducting a proper examination of all parts of the eye is discussed. The microscope does not appear among the paraphernalia recommended, nor is any reference made to the value of this instrument in establishing the diagnosis of angular conjunctivitis due to the Morax-Axenfeld diplobacillus; of purulent conjunctivitis due to the gonococcus, or of spring catarrh. An error of a former era when bacteriology was unknown is again given license to live in the author's discussion of the treatment of hordeolum or sty in the words: "If errors of refraction are present, glasses should be ordered." In spite of its defects, the book has value. It is in no way padded. It is full of common sense advice, and is a safe guide for the general practitioner who wishes or is compelled to treat eye cases.

DIE GALLENSTEINKRANKHEIT, RICHTLINIEN DER INNEREN KLINIK. Von Prof. Dr. Gustav Singer. Paper. Pp. 52, with illustrations. Berlin: Urban & Schwarzenberg, 1923.

We have here a fairly brief up-to-date exposition of our knowledge of cholethiasis, a discussion of the most prominent theories on this subject, and a review of its medical therapy. The interesting fact is quoted that, although necropsy statistics in general show an incidence of gallstones of about 12 per cent. for Germany, in Russia and Japan these are found in only 2 or 3 per cent. of all bodies. A deeper study of these observations might lead to a better knowledge regarding the prophylaxis. The author favors the idea of Kehr and Strauss that the hunger pain of cholelithiasis is due to tension of an excessively filled gallbladder due to insufficient frequency of meals. As Frerichs and Naunyn have shown, food is the best cholagogue; and frequent meals are of advantage to patients with gallstones. In duodenal intubation, the author injects into the duodenum, according to the suggestion of Rost, 30 c.c. of a 5 to 10 per cent. solution of Witte's peptone in order to obtain "gallbladder bile." In this country magnesium sulphate is generally employed for the same purpose. While the peptone reflex is regularly obtained in the healthy, it is absent when there is obstruction of the cystic duct. Excess of leukocytes in the bile obtained points to the presence of inflammation of the gallbladder; but these findings should be interpreted in connection with other reliable criteria, and are not in themselves alone decisive. The author believes that duodenal intubation has some therapeutic value. At any rate, it usually does no harm, though in one case he saw a severe attack of colic precipitated by the peptone injection. In severe cases of occlusion of the common duct, he injects from 50 to 100 c.c. of hot olive oil through the duodenal tube into the duodenum, and he believes that he has obtained surprising results in some desperate cases. Roentgen-ray examination, though it usually does not permit a direct demonstration of gallstones, frequently gives indirect functional and anatomic evidence. The author believes that the bilirubin determination in the blood has great possibilities, and hopes that a method will soon be available that is suitable for general practice. Singer is hopeful of the possibilities of a special chemotherapy of the biliary passages, possibly by heavy metal combinations of the bile acids, which, as is well known, have a marked organotropism toward the liver. According to recent observations of Leo and Wiechowsky, the well established efficiency of Carlsbad water in inflammation of the biliary passages is due, in part at least, to the presence of calcium and silica. These ingredients are usually not present in the artificial substitutes for Carlsbad water. We also are reminded that teas containing equisetum, which is rich in silicic acid, have an old established reputation as a domestic remedy in this condition.

SENILE CATARACT: METHODS OF OPERATING. By W. A. Fisher, M.D., F.A.C.S., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. With the Collaboration of Prof. E. Fuchs, Prof. I. Barraquer, Lt. Col. Henry Smith, Dr. H. T. Holland, and Dr. John Wesley Wright. Cloth. Price, $2.50. Pp. 256, with 160 illustrations. Chicago: Chicago Eye, Ear, Nose and Throat College, 1923.

Seldom has such a group of specialists been united between two covers in discussing one subject without reaching agreement on at least one minor subheading. Each author praises the other collaborators highly and acknowledges that his technic may possibly be the vade mecum, but emphasizes that time alone (indicating centuries) will prove it. Hofrath Fuchs describes the technic used in his former clinic in Vienna, and his diction seems strangely reminiscent of the style employed so successfully by the late Mr. Noah Webster in his well known book. Ignacio Barraquer then uses ninety-four pages (nearly a third of the book) to indicate that he leans strongly toward the vacuum extraction of the cataractous lens. As this process was first described some forty years ago, which he neglects to mention, he coined the new word facoerisis for the operation. This section is profusely illustrated with excellent drawings that look as if they had been made in the Vogt red-free light. Then Colonel Smith discusses capsulotomy operations in one article, and the intracapsular method that goes by his name in another. The latter is well written and, to the nonsurgical ophthalmologist, is convincing. Dr. Holland, a missionary from Shirkapur, India, follows Smith in the book as he does in technic with the exception that he confesses that the intracapsular method fails in about 3 per cent. of the cases, and in those he is forced to resort to capsulotomy. Dr. Wright of Columbus, Ohio, who, independently, devised his own method of intracapsular operation, devotes a few pages to his technic. The intracapsular operation of Knapp and the capsulotomy method of Homer Smith are described briefly by Fisher, and it really seems a pity that the originators of the operation could not have been persuaded to participate in the symposium. The book ends with two chapters by Dr. Fisher: In the first he describes the method he employs, taking points here and there from the others and adding several really excellent features of his own. In the last, the student is shown how he may become proficient as a cataract operator by practicing on kittens' eyes in sufficient quantity.

LEHRBUCH DER GYNÄKOLOGIE. Von Prof. Dr. Rud. Th. v. Jaschke, Direktor der Universitätsfrauenklinik in Giessen, und Prof. Dr. O. Pankow, Direktor der Frauenklinik an der Akademie für Praktische Medizin in Düsseldorf. Third and fourth editions, together with the seventh and eighth editions of Rungeschen Lehrbuches der Gynäkologie. Cloth. Price, $4.80. Pp. 625, with 317 illustrations. Berlin: Julius Springer, 1923.

In the same manner as they have revised Runge's well known textbook on obstetrics, these authors have undertaken a revision of the book on gynecology. The chapters on physiology of woman and diseases of woman have been entirely rewritten. In order to provide space without greatly enlarging the size of the book, the descriptions of certain obsolete operative methods have been discarded. The number of illustrations has also been somewhat increased, and more attention has been paid to the relations of gynecology to other aspects of medical science. In this volume, as in the textbook on obstetrics, the illustrations constitute one of the most important features. One of the most valuable sections of the work is that devoted to the effects of the glands of internal secretion. A special section is devoted to the use of physical therapy, including hydrotherapy, massage, exercise and electrotherapy.

Miscellany

PRESIDENT HARDING'S LAST ILLNESS

Official Bulletins of Attending Physicians

The following are the official bulletins issued by the physicians and consultants who attended President Harding in his last illness: Drs. C. E. Sawyer, Ray Lyman Wilbur, C. M. Cooper, J. T. Boone, and Hubert Work:

July 30, at about 10: 30 a. m.: The President had a fairly comfortable night, with several hours' sleep. His temperature at 9 a. m. was 101; pulse, 118; respiration, 33. The abdominal symptoms following the digestive disturbance which he experienced while on the boat are now localized in the gallbladder region. There are no peritoneal symptoms; the lungs are clear. The white blood cells number 10,800, with 82 per cent. polymorphonuclears. The kidneys are functioning satisfactorily, and there are no disturbances of the nervous system, except those associated with fatigue. While his condition is acute, he has temporarily overstrained his cardiovascular system by carrying on his speaking engagements while ill. It will be necessary for him to have complete rest during the period of his acute symptoms.

July 30, 5: 10 p. m.: The President's condition is as follows: temperature, 100.6; pulse, 125; respiration, 44, and somewhat irregular. There is some cough and evidence of congestion in one lung. He has taken some nourishment. Except for weakness and restlessness he has been fairly comfortable during the day, though his condition is a serious one.

July 30, 9 p. m.: Definite central patches of bronchopneumonia have developed in the right lung, as indicated clinically and by the roentgen ray. Nourishment is being taken regularly, and the abdominal symptoms are less noticeable. While his condition is grave, he is temperamentally well adapted to make a strong fight against the infection. Pulse, temperature and respiration are about the same as in the previous report.

July 31, 9 a. m.: The President had a fairly comfortable night, with considerable restful sleep. His temperature is 100; pulse, 120; respiration, 40 and regular. There has been no extension of the pneumonic areas, and the heart action is definitely improved. Nourishment and fluids are being taken regularly. Elimination is satisfactory. He expresses himself as feeling better and less exhausted.

July 31, 4 p. m.: The President has maintained the ground gained since last night. His temperature is 100; pulse, 120; respiration, 44 and regular. Nourishment is taken regularly, and the laboratory findings indicate elimination is improving. In general, he is more comfortable and is resting better.

July 31, 11: 10 p. m.: The President's condition is: pulse, 116; temperature, 100.2; respiration, 40. He is resting comfortably. No further reports will come from the sick room tonight unless unfavorable symptoms develop.

August 1, 9: 30 a. m.: The President is fairly comfortable this morning, after a few hours of sleep. His breathing is less labored, and there is but little cough. The lung condition is about the same as yesterday. He is still much exhausted, but maintains his normal buoyancy of spirit. Small amounts of food are taken regularly, and there is regular and satisfactory elimination. The temperature is 99; pulse, 114; respiration, 30. While progress is being made, every care is nesessary to assure freedom from further complications.

August 1, 4: 30 p. m.: The President is now resting comfortably after a somewhat restless day. The temperature reached normal during the day, and the pulse has varied from 116 to 120 and the respiration from 36 to 40. There is evidence of slight improvement in the lung condition. Otherwise there is no marked change.

August 2, 9: 30 a. m.: The President had several hours of restful sleep during the night, and, except for the marked exhaustion of an acute illness, expresses himself as feeling easier this morning. The temperature is 98.2; pulse, 100; respiration, from 32 to 40. The lung condition shows definite improvement. Small quantities of food are being taken, and elimination remains satisfactory. While recovery will inevitably take some little time, we are more confident than heretofore as to the outcome of his illness.

August 2, 4: 30 p. m.: The President has had the most satisfactory day since his illness began. The evidences of infection are subsiding, but he has been left in a very weakened condition by the hard battle he has made. This afternoon the temperature is remaining normal, with the pulse rate around 100 and the respiration averaging about 30. Other factors remain about the same.

August 2: The physicians who had been in attendance on the President at midnight issued the following statement:

Last spring, following a long period of overwork and great strain, President Harding was confined to his bed with an attack of influenza which was followed by a few nocturnal attacks of labored breathing. His recovery was slow, and he had not fully regained his normal strength and health when he started out on the trip to Alaska. He had also had some attacks of abdominal pain and indigestion, and at times he had some pain associated with a feeling of oppression in the chest. For some years his systolic blood pressure had ranged around 180, and there was evidence of some arteriosclerosis, enlargement of the heart and defective action of the kidneys. Except for fatigue and the fact that his heart and blood vessels were some years older than the rest of his body, he was in reasonably good health.

On the return trip from Alaska, he had an acute gastrointestinal attack associated with abdominal pain and fever. In spite of his illness he insisted on putting through his program of speaking in Vancouver and Seattle. He had considerable difficulty in completing his addresses in Seattle because of weakness and pain. Because of this he was persuaded to come directly to San Francisco, and arrived at the Palace Hotel Sunday morning, July 28. He dressed and walked to the automobile from the train. Sunday evening a consultation was called, because his temperature had risen to 102 and his pulse and respirations were abnormally rapid. The abdominal difficulty had by this time become localized in the gallbladder region, but there was a general toxemia, with fever and leukocytosis. A central bronchopneumonia soon developed on the right side. It was accompanied by short circulatory collapses, with cold sweats and an irregular pulse. Most disturbing of all was the rapid and irregular breathing suggestive of arteriosclerosis of the brain vessels in the region of the respiratory center.

Under treatment, marked improvement in the pneumonia and circulatory disturbances took place, and Thursday, August 2, he was free from fever and pain; the acute lung condition was practically gone. He was resting comfortably in bed and conversing with Mrs. Harding and General Sawyer, when he died instantaneously without a word or a groan.

We all believe he died from apoplexy or the rupture of a blood vessel in the axis of the brain near the respiratory center. His death came after recovery from the acute illness was in process. It might have occurred at any time. One of his sisters died suddenly in the same manner.

August 3: Statement by consulting physicians:

We have been asked by President Harding's personal physicians before they leave San Francisco to put on record our impression of the President's physical condition as it affected his last illness and his sudden death.

As already indicated in the bulletins, the heart was enlarged, and probably the blood vessels which carry to it its nutriment thickened, for his history shows that previously he had had anginal manifestations and that during sleep the respiratory center was insufficiently fed. Furthermore, he had suffered from nocturnal dyspnea and a Cheyne-Stokes type of respiration; yet, as often happens in such cases, he had full confidence in his bodily strength; his mind remained most alert, and his judgment unimpaired.

At 4:30 p. m., yesterday, prior to his sudden apopleptic seizure, it seemed to Mrs. Harding and to us that the fight was won and that, with sufficient rest and the carrying out of a definite medical program, this illustrious man, in fair physical health and in full mental vigor, could be preserved for his country.

RAY LYMAN WILBUR, M.D., President,
American Medical Association.
CHARLES MINER COOPER, M.D.

Medicolegal

Validity of Health Council Enactment—Quarantine

(Ex parte Company (Ohio), 139 N. E. R. 284)

The Supreme Court of Ohio, in refusing writs of habeas corpus to the petitioner in this case and one in another case considered at the same time, says that the Act of 1917, which created the state department of health, provided for the creation of a public health council with the duty and power "to make and amend sanitary regulations to be of general application throughout the state." Regulation No. 2 of the sanitary code adopted—effective July 1, 1920—named, classified, and declared dangerous to the public health certain diseases and disabilities, and included in Class B of such designated diseases those known as chancroid, gonorrhea and syphilis. Regulation 18 of the sanitary code declares such diseases to be contagious, infectious, communicable, and dangerous to the public health. Regulation 23 empowers the health commissioner of each city to make examination of persons reasonably suspected of having a venereal disease. All known prostitutes and persons associating with them shall be considered as reasonably suspected of having a venereal disease. Regulation 24 provides that the health commissioner may quarantine any person who has, or is reasonably suspected of having, a venereal disease, whenever in his opinion quarantine is necessary for the protection of the public health. The court holds that the designation of the diseases named in Class B, and Regulations 18, 23 and 24 in relation thereto, are a lawful exercise of the police power of the state; that such regulations and the quarantine therein provided for are not in conflict with, nor do they violate, any provision of either the federal or the state constitution. The right of the state through the exercise of its police power to subject persons and property to reasonable and proper restraints in order to secure the general comfort, health and prosperity of the state is no longer open to question. In the American constitutional system the power to establish the necessary police regulations has been left with the several states.

In the cases here considered it is to be observed that both of the petitioners were charged with violations of Section 13031—13, General Code. Regulation 24 provides that such infected persons shall be subject to quarantine. The statutory provision is that such infected persons shall not be discharged from custody, paroled, or placed on probation. No inconsistency is found as between the regulations complained of and the provisions of the statute. In either event, quarantine is established. Quarantine in the sense herein used means detention to the point of preserving the infected person from contact with others. The power so to quarantine in proper case and reasonable way is not open to question. It is exercised by the state and the subdivisions of the state daily. The protection of the health and lives of the public is paramount, and those who by conduct and association contract such disease as makes them a menace to the health and morals of the community must submit to such regulations as will protect the public.

It was contended that the legislature is without power to delegate its law-making authority. The distinction between power granted to legislate and power granted to administer marks the difference between the contention urged and the true question herein to be considered. That the legislature in the exercise of its constitutional authority may lawfully confer on boards of health the power to enact sanitary ordinances having the force of law within the districts over which their jurisdiction extends is not an open question. This power has been repeatedly recognized and affirmed. It is true that in *State ex rel. Adams* v. *Burdge*, 95 Wis. 390, 70 N. W. 347, it was held that the state board of health of Wisconsin was a purely administrative body, and had no regulatory powers, and that none could constitutionally be delegated to it; but that case apparently stands alone. This court throughout its investigation has been unable to find that that case has been approved or followed in any other jurisdiction. Moreover, it was decided in that case that there was no power in the state board of health to quarantine as against smallpox, or to compel vaccination, or to exclude children from the public schools because of nonvaccination. This court does not subscribe to either the principle or the pronouncement of the Burdge Case.

Information Given to Medical Examiners

(Brown v. Mutual Life Ins. Co. of New York (Ga.), 116 S. E. R. 559)

The Court of Appeals of Georgia, Division No. 2, in reversing a judgment on a verdict directed for the defendant company in this action to recover on a policy of insurance, holds that a physician designated by a life insurance company to examine applicants for life insurance acts as an agent of the company in receiving answers to medical questions propounded to an applicant, and any information given to the physician in answer to such questions is information to the company, although such information does not appear in the application signed by the applicant, and the application contains answers giving information to the contrary. In an action on the policy, the answers actually given by the applicant to the medical examiner, although in conflict with those contained in the written application signed by the applicant, may be placed in evidence by the testimony of one who heard them at the time they were made to the medical examiner. When such statements by the applicant made to the medical examiner were to the effect that the applicant had had malarial fever about a year before the time of the application, and had been treated therefor by two physicians whom she named, who were other than the physicians whose names appeared in the application as the only physicians who treated her, such statements to the medical examiner were relevant as evidence tending to establish information on the part of the insurance company affecting the materiality of the risk, and it was therefore error to exclude them from evidence.

The court further holds that the materiality of alleged false representations made by an applicant being a conclusion, and ordinarily a question for the jury, it is error to permit a medical officer from the home office of the insurance company to testify that, had the company known of the falsity of the representations contained in the application, the company would not have accepted the risk. However, it is proper for such a witness to testify to facts tending to establish the materiality of the representations alleged to have been made in the application as affecting the risk.

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, Philadelphia, Sept. 19-21. Dr. James E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Public Health Association, Boston, Oct. 8-11. Mr. A. W. Hedrich, 370 Seventh Avenue, New York, Secretary.

American Roentgen Ray Society, Chicago, Sept. 18-23. Dr. W. W. Watkins, Goodrich Building, Phoenix, Ariz., Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 4-6. Col. James Robb Church, Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Glenwood Springs, Sept. 4-6. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Middletown, Oct. 8-9. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Terre Haute, Sept. 26-28. Dr. Charles N. Combs, Terre Haute, Secretary.

Kentucky State Medical Association, Crab Orchard, Sept. 17-20. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Medical Association of the Southwest, Kansas City, Mo., Oct. 4-8. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 11-13. Dr. F. C. Warnshuis, 410 Powers Building, Grand Rapids, Secretary.

Minnesota State Medical Association, St. Paul, Oct. 10-12. Dr. Carl B. Drake, Guardian Life Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Hot Springs, Ark., Oct. 9-11. Dr. John L. Tierney, University Club Bldg., St. Louis, Secretary.

Missouri Valley Medical Society of the, Omaha, Sept. 20-21. Dr. Charles W. Fassett, 115 East 31st Street, Kansas City, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Vermont State Medical Society, Bennington, Oct. 11-12. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Oct. 3-5. Mr. J. G. Crownhart, 558 Jefferson St., Milwaukee, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

8: 581-694 (June) 1923

Case of Folliculoid Cancer of Ovary. Classification of Ovarian Tumors. M. R. Robinson, New York.—p. 581.
Symptoms and Signs of Extra-Uterine Pregnancy at or Near Term: Report of Two Cases. Treatment of Late Ectopic Gestation. Review of Literature. H. E. Hayd and I. W. Potter, Buffalo.—p. 601.
Defenseless Areas of Abdomen. G. W. Crile, Cleveland.—p. 620.
Surgical Strategy as Adjunct to Local Anesthesia in Abdominal Surgery. R. E. Farr, Minneapolis.—p. 624.
*Primary Sterility. A. J. Rongy, New York.—p. 631.
New Obstetric Table. E. L. Cornell, Chicago.—p. 637.
*What Constitutes Surgical Cervix? An End Result Study of 350 Cervical Operations with Their Effects on Sterility, Discharge, Pregnancy and Labor. J. O. Polak and G. W. Phelan, Brooklyn.—p. 640.
Electrotherapy In Gynecologic Practice. E. C. Titus, New York.—p. 647.

Treatment of Primary Sterility.—A careful study of his patients has convinced Rongy that the percentage of sterile patients who are amenable to treatment is very small. As a general rule, women who suffer from primary sterility can be separated into three distinct groups: (1) Patients with congenital defects. Such women are beyond the help of all known therapeutic measures. (2) Women who apparently do not have physical defects of the genital organs, but suffer from disturbance of function of these organs. In these patients the sterility very often is temporary in character. It is in this class of patients that to the treatment is ascribed the successful outcome of the case. Rongy asserts that a great number of these patients would have become pregnant if they had not been treated. (3) To this group belong all patients who are sterile because of mechanical obstruction of the tubes, which is caused by infection acquired during the marital state, or induced by inflammatory reactions of the genital organs which occurred during an infectious or contagious disease in infancy or childhood. Not infrequently closure of the tubes can be traced to an extension of the process of specific vulvovaginitis in young children. It is surprising to find the number of young women whose tubes are closed and who have no immediate history of infection of the genital tract. Plastic operations on the tubes in these patients has not cured many. Pregnancy ensued in less than 15 per cent.; the others remained permanently sterile. Partial resection of one or both tubes will often rob the women of any possible chance for future pregnancy, as the postoperative reaction in the pelvis after such an operation is, not infrequently, very severe and causes great damage to the genital organs. Rongy says that present methods of treatment of sterility must be discarded.

Are Operations on Uterine Cervix Effective?—Critical study of this series of cases has led Polak and Phelan to the belief that operation on the surgical cervix, i. e., for extensive or multiple lacerations, extensive erosion with hyperplasia or cystic degeneration, even when the type of operation is carefully selected, in a large number of cases does not cure the leukorrhea or sterility, and that unless the operation is preceded by a long period of preliminary local treatment, the leukorrhea is cured in only a little more than 50 per cent. of the cases subjected to operation. It is, therefore, urged that all operations on chronically infected cervices be preceded by local treatment. Only a relatively small number of sterilities are cured by operations on the cervix, and these operations should only be done for this cause after a Huhner and a Rubin test have shown that the fault is in the biochemical changes in the cervical discharge. Should pregnancy occur after amputation or excision, it is more likely to terminate in abortion than has been the case when trachelorrhaphy has been elected. Polak and Phelan assert that dystocia during labor is also more common after amputation and excision than after cervical repair.

American Journal of Ophthalmology, Chicago

6: 449-544 (June) 1923

Rupture of Choroid: Report of Two Cases. H. D. Lamb, St. Louis.—p. 449.
Effect of Intensity of Stimulus on Size and Shape of Color Fields and Their Order of Ranking as to Breadth. C. E. Ferree and G. Rand, Bryn Mawr, Pa.—p. 453.
Interstitial Keratitis Due to Focal Infection. C. P. Jones, Newport News, Va.—p. 461.
Ocular Inflammations Result of Distant Focal Infection. J. Dunn, Richmond, Va.—p. 464.
Case of Glioma of Optic Thalamus. L. A. Levinson and F. W. Alter, Toledo, Ohio.—p. 468.
Papillary Epithelial Tumor of Orbit. C. C. Saelhof, Chicago.—p. 473.
Familial Retino-Cerebral Degeneration. W. H. Nardin, Anderson, S. C., and R. S. Cunningham, Baltimore.—p. 476.
Neuro-Epithelioma, or Glioma of Retina. J. A. Morgan, Honolulu.—p. 484.
Chalazion Technic. H. Gifford, Omaha.—p. 487.
Steel Splinter Penetrating Lens Without Cataract Formation. G. H. Cross, Chester, Pa.—p. 487.
Spontaneous Rupture of Eyeball. W. W. Gilfillan, New York.—p. 488.
Anterior Subluxation of Crystalline Lens Without Trauma. M. C. Loree, Akron, Ohio.—p. 488.

Archives of Neurology and Psychiatry, Chicago

9: 689-830 (June) 1923

*Mechanism and Fundamental Causes of Epilepsies. J. Rosett, New York.—p. 689.
Lesions of Optic Chiasm and Tracts with Relation to Adjacent Vascular Structures. T. Fay and F. C. Grant, Philadelphia.—p. 739.
Epidemic Encephalitis. Pathologic Study of Five Cases, Including Two with Myoclonia. M. E. Morse, Boston.—p. 751.
Stabilizing Brain Tissue During Fixation. G. S. Stevenson, Ward's Island, N. Y.—p. 763.
*Implantation of Bacillus Acidophilus in Persons with Psychoses. L. A. Julianelle and F. G. Ebaugh, Philadelphia.—p. 769.

Mechanism of Epilepsy.—The investigation made by Rosett discloses a physiologic reaction in normal man and animals which consists of the following connected train of phenomena: (1) A temporary reduction, disintegration or extinction of the cerebral functions. (2) A tonic contraction of the entire skeletal musculature, with a certain predominance of the extensors, adductors and pronators; the consequent fixation of the joints resulting in the posture characteristic of the state of decerebrate rigidity. (3) Clonic muscular contractions, i. e., alternating contractions of antagonistic groups of muscles. (4) Recovery, marked by symptoms of integration of the disintegrated cerebral functions and a state of general exhaustion. This reaction, in a more or less pronounced form, normally occurs under two sets of conditions: (1) on exposure to the action of a stimulus requiring sudden movement on the part of the organism, or the narrow focusing of attention and (2) in connection with certain functions, such as sleep, defecation, sneezing, coughing, parturition. The mechanism of this reaction is to be found in certain anatomic structures and physiologic functions underlying the production and distribution of muscle tonus in the nervous system. The biologic purpose of the reaction is the automatic fixation of the relatively central joints preparatory to any possibly needed movement of relatively distal segments of the body and limbs. The reaction is characterized by a periodicity of occurrence. The phenomena which constitute the normal reaction described, being in a great number of particulars the same as those which constitute the epileptic paroxysm, a suitable name for it would appear to be the normal epileptoid reaction. The normal epileptoid reaction is elicited with greater ease under the influence of the same agencies which cause an exaggeration of the epileptic paroxysm. An example of such an agency is the action of caffein. On the other hand, influences which are potent in holding the epileptic paroxysm in abeyance, such as the action of the bromids and phenobarbital, have the power to diminish the manifestations of the normal epileptoid reaction. A slight and transient suspension of the higher functions, resulting as it does in a release of function of the lower levels, brings about the normal epileptoid reaction. Any factor, therefore, which operates permanently so as to cause large periodic suspensions of the highest nerve functions, whether that factor be a brain tumor, a poison in the blood, a peripheral irritation or an inherited defect, will, by a permanent exaggeration of the normal reaction, tend to degrade it to the clinical picture of the epileptic paroxysm.

Implantation of Bacillus Acidophilus in Psychosis Cases.—Ten patients were studied by Julianelle and Ebaugh. A normal person was used as a control for the rapidity, degree and permanency of *Bacillus acidophilus* implantation. The ten patients all presented marked constipation and frequently complained of headache and fatigue. The chief aims of the experiments were: first, the relief of constipation by implantation and maintenance of *B. acidophilus* in the intestine; and second, observance of the effects on the course of the psychosis. Implantation of *B. acidophilus* in the intestine of patients with psychoses by the oral administration of acidophilus milk resulted in elimination of intestinal putrefaction and in some cases in an increase in weight but no improvement in the mental condition. Intestinal putrefaction is probably a concomitant of some forms of psychosis, if it is at all related. The administration of acidophilus milk is recommended in the treatment of psychoses as a means of physical betterment.

Archives of Occupational Therapy, Baltimore

2: 171-252 (June) 1923

Problem of Physically Handicapped. P. K. Brown, San Francisco.—p. 171.
Status of Occupational Therapy in Canada. N. L. Burnette, Ontario.—p. 179.
Costs of Occupational Therapy and Allied Therapeutic Activities. L. J. Hass, White Plains, N. Y.—p. 183.
Financial Side of Occupational Therapy in State Hospitals. H. M. Pollock, Albany, N. Y.—p. 187.
Cost of Occupational Therapy in Private Sanitarium for Mental Cases. W. W. Richardson, Mercer, Pa.—p. 193.
Charts Used in Sheppard and Enoch Pratt Hospital. H. G. Price.—p. 195. Financial Charts. W. R. Dunton, Jr.—p. 198.
Report of Occupational Therapy in Connecticut. K. H. Root, Stamford.—p. 203.
Experiences with Exservice Men in General Hospital. D. D. Rouse, Minneapolis.—p. 209.
Report of Activities of Massachusetts Association for Occupational Therapy, January, 1921, to September, 1922. H. A. Robeson, Boston.—p. 211.
Occupational Therapy in South Dakota. B. Stewart, Hot Springs.—p. 217.
Crafts Best Suited for Mental and Nervous Patients. W. R. Dunton, Towson, Md.—p. 221.

Annals of Surgery, Philadelphia

77: 641-793 (June) 1923

Surgical Relations of Sympathetic Nervous System. G. P. Muller, Philadelphia.—p. 641.
*Surgical Treatment of Unilateral Pulmonary Tuberculosis. E. Archibald, Montreal.—p. 652.
Tuberculosis of Breast. Report of Seven Cases. D. C. Elkin, Boston.—p. 661.
*Tumors of Breast; Innocent and Malignant. A. Primrose, Toronto.—p. 668.
Ranula: Report of Case. V. P. Blair, St. Louis.—p. 681.
Factors of Safety in Thyroid Surgery. W. Bartlett, St. Louis.—p. 685.
Pathologic Fracture of Neck of Femur Due to Thyroid Metastasis. I. Zadek, New York.—p. 689.
*Involvement of Lymph Glands in Cancer of Cecum. W. McK. Craig and Wm. C. MacCarty, Rochester, Minn.—p. 698.
*Cancer of Rectum and Sigmoid in Childhood and Adolescence. C. H. Phifer, Chicago.—p. 711.
*Sarcoma of Omentum. G. H. Copher, St. Louis.—p. 721.
Congenital Diaphragmatic Hernia: Report of Case. J. P. Connors and W. T. Robinson, New York.—p. 725.
Nonoperative Treatment of Displaced Semilunar Cartilages of Knee Joint. D. Graham, Boston.—p. 729.
Fractures of Femur in Children. Treatment and End Results in 268 Cases. C. G. Burdick and Irwin E. Siris, New York.—p. 736.

Surgical Treatment of Unilateral Pulmonary Tuberculosis.—The total number of patients on whom Archibald has performed extrapleural thoracoplasty for unilateral pulmonary tuberculosis is fifteen. A posterior thoracoplasty was carried out in all but one case in which Archibald resected the whole side of the bony thorax according to Friedrich's plan. The ages of these patients varied from 27 to 55 years. The duration of the illness previous to operation was from two to twenty-two years. The Sauerbruch operation, from the second or first to the tenth rib behind, was done in eleven cases; a total resection was done in one case; a partial resection in three cases. In these last three cases either the upper or the lower lobe was already compressed by an artificial pneumothorax, which was maintained. Three patients died from the operation. Of these, one followed the Friedrich operation. Another died on the twentieth day from streptococcus infection arising in a small abscess hidden under the scapula. This patient had had sixteen punctures done in the attempt to induce artificial pneumothorax. The third died after a third operation; that is, an apicolysis, following two previous ones, posteriorly, on the sixth day, from edema of the good lung with acute purulent bronchitis. On the other hand, practical cures in these fifteen cases number three. The results were: markedly improved three, slightly improved two, and stationary, three. Finally, one died twenty months after operation from the progress of the disease.

Tumors of Breast.—This paper is based on 286 cases of carcinoma, five cases of sarcoma, and 157 benign tumors. Primrose does not agree with Bloodgood that "multiplicity of multiple tumors is suggestive of benignity," and cites a case which showed a very definite relationship between chronic inflammatory conditions in the breast (chronic mastitis) and malignancy; the latter being often the precursor of carcinoma. He also protests against the teaching of Bloodgood that simple cysts in women under 25 are not dangerous, and favors that implied in the aphorism of Finney, when he said, "Any lump in any woman's breast is better out than in."

Lymph Glands in Cancer of Cecum.—One hundred preserved specimens of cancer of the cecum which had been removed at operation formed the basis of the study made by Craig and McCarty. There were sixty-eight cases without and thirty-two cases with metastatic involvement of the regional lymph glands. Colloid cancer, without metastatic involvement of the regional lymph glands, occurred in eight cases, and colloid cancer with metastatic involvement of the regional lymph glands occurred in twelve cases. The size of the intestinal lesion, and the size and number of the regional lymph glands proved to be no criterion of the presence or absence of metastasis. In cases in which a large number of glands were involved pathologically, a high degree of malignancy was usually noted clinically. Predominance of involvement of the posterior ileocolic lymph glands is of significance and should prove of value in the operating room, since 71 per cent. of all glands found were in this region, and 64 per cent. of the glands which showed metastatic involvement belonged to this group.

Cancer of Rectum and Sigmoid.—Phifer analyzes forty-nine reported cases and adds one case of his own.

Sarcoma of Omentum.—Copher cites a case of primary sarcoma of the great omentum with metastasis to the liver in a male, aged 44. The chief complaint was vomiting, pain in the abdomen, weakness and loss of weight. The vomitus was generally of the "coffee-ground" type. A diagnosis of carcinoma of the stomach had previously been made. Operation disclosed a tumor beneath the stomach with many adhesions. The abdomen contained much bloody fluid. The liver lay in contact with the tumor and in the left lobe there was an accumulation of metastatic nodules. Stomach, pancreas, spleen, kidneys and suprarenals were free from tumor. The duration of the illness was only four months.

Boston Medical and Surgical Journal

188: 1023-1034 (June 28) 1923

*Cardiotomy and Valvulotomy for Mitral Stenosis. E. C. Cutler and S. A. Levine, Boston.—p. 1023.
Conservative vs. Radical Obstetrics. R. L. De Normandie.—p. 1028.
Where Does Mental Hygiene Begin? L. V. Briggs, Boston.—p. 1034.
Gastroptosis in Its Relation to Gynecology. K. C. Mead, Middletown, Conn.—p. 1037.
Tuberculosis Problem in Massachusetts. E. R. Kelley, Boston.—p. 1041.

Valvulotomy for Mitral Stenosis.—The picture presented in the case cited by Cutler and Levine was one of mitral stenosis in a child that had no cardiac reserve. She could be fairly comfortable in bed, except for repeated attacks of severe hemoptysis. It was impossible to get her out of bed. The heart muscle was still in fair condition and the stenosis was sufficient to be an important factor from a purely mechanical point of view. Hence, surgical intervention was advised. Ether was administered through a catheter passed into the nasopharynx through the nose, and using the Connell machine. The exposure elected was an elaboration of Milton's median sternotomy known as the Duvall-Barasty median thoracoabdominal pericardiotomy. The pericardium was split up its

anterior surface almost to the base of the heart. Next, the posterior pericardium and diaphragm were divided together, toward the suspensory ligament, thus permitting the bottom of the wound to open widely and exposing the entire heart to view and manipulation. The pulse, which was 180 during the early stages of anesthesia, had dropped to 120, and the pressure had dropped from 110/50 to a systolic of 50. Realizing that heart muscle will stand severe trauma better if gradually initiated to its task, the heart was several times rolled out of its position. At this point about 0.5 c.c. of 1:1,000 epinephrin solution was allowed to drip over the heart, followed by some hot salt solution. At once the heart responded by vigorous and full contractions. Rolling the heart out and to the right by the left hand, the valvulotome was plunged into the left ventricle at a point about 1 inch from the apex and away from the branches of the descending coronary artery, where two mattress sutures had already been placed. The knife was pushed upward about 2½ inches, until it encountered what seemed to be the mitral orifice. It was then turned mesially, and a cut made in what seemed to be the aortic leaflet, the resistance encountered being very considerable. The knife was quickly turned and a cut made in the opposite side of the opening. The knife was then withdrawn and the mattress sutures already in place were tied over the point at which the knife had been inserted. There was no bleeding. Hot saline was dripped onto the heart, whose action continued good. The posterior pericardium and diaphragm were closed by a continuous suture of silk, next the small opening in the abdomen in a similar fashion, and the anterior pericardium likewise. No opening had been made in the pleurae and there had been no respiratory disturbance throughout the procedure. At the conclusion of the operation the pulse was 140, respiration 40, and blood pressure, 80/40. The general condition of the patient seemed good. The authors state that at this stage of their observations they cannot with accuracy define just what occurred nor what benefits may have accrued, if any. The experience with this case, however, is of importance in that it shows that surgical intervention in cases of mitral stenosis bears no special risk, and should give further courage and support to attempts to alleviate a chronic condition for which there is now not only no treatment, but one which carries a terrible prognosis.

Florida Medical Association Journal, St. Augustine and Jacksonville

9: 192-211 (June) 1923

Proceedings of the Fiftieth Annual Meeting of Florida Medical Association.—p. 193.

Illinois Medical Journal, Oak Park

43: 410-476 (June) 1923

Surgical Judgment. J. H. Gibbon, Philadelphia.—p. 424.
Certain Factors to be Considered in Judging Effects of Prohibition in Relation to Use of Narcotics. L. D. Volk, Brooklyn.—p. 428.
Smallpox: Differential Diagnosis. A. L. Hoyne, Chicago.—p. 433.
Tuberculosis of Bones and Joints. W. A. Kimmet, Oak Forest.—p. 436.
Nephrolithiasis Complicating Pregnancy. A. P. Heineck, Chicago.—p. 442.
Specific Hypersensitiveness as Common Cause of Illness. W. W. Duke, Kansas City, Mo.—p. 445.
Treatment of Compound Fractures of Extremities. W. H. Byford, Chicago.—p. 452.
Gunshot Injury Involving Ulnar Nerve. A. Bamberger, Chicago.—p. 453.
Acute Appendicitis in Children. T. H. Kelley, Chicago.—p. 454.
Modern Conceptions of Acidosis. J. S. Weingart, Des Moines, Iowa.—p. 459.
Acute Abscess of Nasal Septum: Case Reports. S. M. Morwitz, Chicago.—p. 463.
Plea for Eradication of Chronic Endocervicitis. J. O. Cletcher, Cisco.—p. 465.
Unusual Foreign Body (Seed) in Eye. W. D. Drake, Effingham.—p. 468.

Indiana State Medical Association Journal, Ft. Wayne

16: 189-216 (June) 1923

Rights and Duties of Surgeon. M. F. Porter, Fort Wayne.—p. 189.
Diagnosis of Duodenal Ulcer. F. W. Foxworthy, Indianapolis.—p. 192.
Cycloplegics in Refraction Work. A. E. Bulson, Jr., Fort Wayne.—p. 198.
*Paratyphoid in Baby: Report of Case. L. J. Wisch, Whiting.—p. 204.
*Crochet Needle in Abdominal Cavity: Case Report. R. O. McAlexander, Indianapolis.—p. 204.

Paratyphoid in Baby.—Wisch's patient was only 5 months of age. There was the usual clinical history with recovery.

Crochet Needle in Abdominal Cavity.—McAlexander's patient introduced into her uterus, blunt end first, a celluloid crochet needle, 5 inches long, to induce abortion. She lost control of the needle. She suffered no distress, was able to attent to her household duties, but not finding the needle she became alarmed and called her family physician, who made the usual examinations without finding the needle. Then McAlexander saw her. No evidence of a foreign body could be found in the pelvis or uterus. Her only symptom was that on rare occasions she experienced a slight sticking pain in the abdomen. It never occurred twice in the same region. Her mental state seemed to be the chief concern. Roentgenray examination was negative. An exploratory laparotomy was decided on. The crocret needle was found. It was caught in the omentum by the hooked end, the blunt end being free. No evidence of traumatism could be observed about the uterus or pelvic cavity. The patient made an uneventful recovery.

Journal of Industrial Hygiene, Boston

5: 41-80 (June) 1923

Some Results of Investigation into Efficiency of Linen Weavers. H. C. Weston.—p. 41.
Observations on Dysmenorrhea Occurring in Women Employed in a Large Department Store. M. C. Sturgis, Philadelphia.—p. 53.
Prevention of Industrial Lead Poisoning in English Factories. A. C. Burnham, New York.—p. 57.
Atmospheric Particulate Matter: Dust, with New Apparatus for Its Determination. P. Drinker, R. M. Thomson and S. M. Fitchet, New Haven, Conn.—p. 62.

Journal of Urology, Baltimore

9: 491-553 (June) 1923

*Therapeutic Value of Two New Synthetic Antimony Compounds in Cases of Granuloma Inguinale. A. Randall, Philadelphia.—p. 491.
Granuloma Inguinale (Ulcerating Granuloma, Serpiginous Ulceration of Genitals, Ulcerating Granuloma of Pudenda, etc.). M. Weinberg, Sumter, S. C.—p. 505.
Torsion of Spermatic Cord. E. L. Keyes, Jr.; C. W. Collings and M. F. Campbell, New York.—p. 519.
*Infection of Seminal Vesicles in Relation to Systemic Disease. F. W. Smith and J. H. Morrissey, New York.—p. 537.

New Antimony Compounds in Treatment of Granuloma Inguinale.—The two drugs studied by Randall were sodium antimony thioglycollate and triamide of antimony thioglycollic acid. Both preparations were made about twelve years ago by J. J. Abel. The results were excellent. No toxic effects were noted and there was a complete absence of the symptoms usually following tartar emetic administration. The triamide of antimony thioglycollate is regarded as practically specific in its action on the lesions of granuloma inguinale, with a toxicity probably less than that of tartar emetic.

Infection of Seminal Vesicles.—Smith and Morrissey dwell on the importance of seminal vesiculitis as a focus of infection and urge operative treatment on the vesicles in the cases falling in this group.

Kansas Medical Society Journal, Topeka

23: 143-172 (June) 1923

Race Improvement. M. L. Perry, Topeka.—p. 143.
*Insulin Treatment of Diabetes. R. H. Major.—p. 148.
Id. D. R. Thomas, Halstead.—p. 151.

Insulin Treatment of Diabetes.—Major regrets that the term "cure" has been applied by the lay press in speaking of insulin. It does not abolish dietary restrictions in a diabetic, although its use permits the patient to follow a much more liberal diet than would be possible otherwise. It unquestionably permits many severe diabetics "with a progressive course downward" to live in comparatively good health and comfort, instead of dying in coma. It is premature to speak of insulin as a "cure" for diabetes. There is no doubt, however, that it is easily the greatest single advance that has ever been made in the therapy of diabetes mellitus.

Kentucky Medical Journal, Bowling Green

21: 263-300 (June) 1923

Intestinal Obstruction. H. T. Rivers, Paducah.—p. 266.
Cases of Intestinal Resection. E. S. Allen, Louisville.—p. 267.
Mechanism of Prostatism. O. Grant, Louisville.—p. 275.

Pancreatic Cyst: Report of Case. E. W. Northcutt, Covington.—p. 285.
Subacute Vegetative Endocarditis. L. K. Baldauf, Louisville.—p. 287.
Practical Value of Protein Sensitization. R. H. Davis, Louisville.—p. 291.
Exostosis of Tibia: Osteomyelitis. Case Reports. G. P. Grigsby, Louisville.—p. 295.
Immunity and Infectious Diseases. J. S. Chambers, Paducah.—p. 296.
Therapeutic Abortion. L. C. Redmon, Lexington.—p. 298.

Maine Medical Association Journal, Portland

13: 265-298 (June) 1923

Hydrotherapy. W. W. Bolster, Lewiston.—p. 265.
Mental Therapy. L. P. Gerrish, Lisbon Falls.—p. 270.
Radiotherapy in Treatment of Superficial Malignant Disease. R. B. Josselyn, Portland.—p. 279.
Intravenous Medication Made Safer. H. R. Whitney, Portland.—p. 284.

Michigan State Medical Society Journal, Grand Rapids

22: 271-292 (June) 1923

Glandular Fever. C. A. Van Dusen, Ogden Center.—p. 271.
Acute Pelvic Problems. L. Dretzka, Detroit.—p. 272.
Electrotherapy, or What the Physician Can Do and Should Do for "Chronics." J. E. G. Waddington, Detroit.—p. 273.
Does Diet Influence the Course of Basal Metabolic Rate in Exophthalmic Goiter? H. G. Waller and M. N. Woodwell, Ann Arbor.—p. 275.
Sinus Thrombosis. H. F. Ohrt, Detroit.—p. 276.
Signs and Symptoms in Exophthalmic Goiter. C. F. McClintic, Detroit.—p. 277.

22: 293-322 (July) 1923

*Hysterical Paralysis; Report of Case of Five Years' Duration. L. J. Foster, Ann Arbor.—p. 293.
Modern Viewpoints on Gastro-Intestinal Surgery. A. M. Campbell, Grand Rapids.—p. 294.
Early Mobilization in Treatment of Fractures. H. C. Saltzstein, Detroit.—p. 299.
Medical Profession Seen Through Eyes of Preacher. K. D. Beach, Grand Rapids.—p. 302.
Diagnosis and Management of Tabes Dorsalis. F. P. Currier, Grand Rapids.—p. 304.
Obligations of Doctors. A. P. Johnson, Grand Rapids.—p. 311.

Treatment of Hysterical Paralysis.—The main features of Foster's case were a spasmodic quadriplegia with contractures and a hysterical trismus of five years' duration. The patient was treated by psychotherapy by means of strict isolation and persuasion and received a daily treatment with static electricity to reinforce the suggestion. Two weeks after the beginning of treatment the hands were held open and the arms could be moved in any direction. She could also flex the legs at the knees and was able to chew her food. After another two weeks she was able to walk, but with a markedly hysterical gait. She continued to improve and was soon able to walk up and down stairs. Two months after her entrance she was discharged walking normally, having no complaints and weighing 105 pounds.

Military Surgeon, Washington, D. C.

52: 567-670 (June) 1923

Statics of Human Arch When Subjected to Body Weight. H. L. Dunn.—p. 567.
A Field Test for Determining Potability of Water; Method for Performing Presumptive Test for Bacterium Coli Without Special Laboratory Equipment. A. P. Hitchens.—p. 629.
Joseph Janvier Woodward, Brevet Lieutenant Colonel, U. S. Army, Pioneer in Photomicrography, Pathologic Histology and Medical Historian of Civil War. J. C. Hemmeter, Baltimore.—p. 635.
What is Mean Annual Death Rate? P. R. Hawley.—p. 648.

Minnesota Medicine, Minneapolis

6: 363-430 (June) 1923

Is Public Health Work a Menace to Regular Medicine? C. L. Scofield, Benson.—p. 363.
Traumatic Rupture of Normal Spleen. E. C. Robitshek, Minneapolis.—p. 365.
Prostatectomy from Standpoint of General Practitioner. V. J. LaRose, Bismarck, N. D.—p. 376.
Obliteration of Bone Cavities in Chronic Osteomyelitis by Free Fat Transplantation. G. R. Dunn, Minneapolis.—p. 379.
Treatment of Fresh Fractures of Shaft of Femur. R. Earl, St. Paul.—p. 383.
Fractures About Hip Joint. C. C. Chatterton, St. Paul.—p. 387.
Fractures of Forearm. W. H. Cole, St. Paul.—p. 390.
Management of Heart Disease in Children. M. Seham, Minneapolis.—p. 393.
Standardization of Clinical Laboratories and Technicians. K. Ikeda, Minneapolis.—p. 397.
Empyema. H. L. Beye, Iowa City.—p. 401.

Nebraska State Medical Journal, Norfolk

8: 185-220 (June) 1923

Responsibility of Medical Profession to Civilization. B. F. Bailey, Lincoln.—p. 185.
Present Day Economic Problems in Medicine. C. A. Roeder, Omaha.—p. 197.
Cult Menace. E. L. Bridges, Omaha.—p. 201.
Insulin Treatment of Diabetes. L. Crummer, Omaha.—p. 205.
Management of Acute Brain Injuries. G. E. Neuhaus, Omaha.—p. 207.
Thymus Disease in Children: Report of Case. H. E. Flansburg, Lincoln.—p. 211.
Malnutrition in Children of Preschool Age. W. O. Coiburn, Lincoln.—p. 213.

New Jersey Medical Society Journal, Orange

20: 181-216 (June) 1923

Medical Problems of Yesterday. T. W. Harvey, Orange, N. J.—p. 181.
Medical Practitioner and American Society for Control of Cancer. J. E. Rush.—p. 186.
Sanatorium; Most Valuable Agency in Antituberculosis Campaign. M. F. Sloan, Baltimore.—p. 188.
Rest and Exercise in Sanatorium Treatment of Pulmonary Tuberculosis. I. Kaufman, Philadelphia.—p. 194.
Clinical Value of Blood Chemistry. E. L. Shaffer, Trenton, N. J.—p. 198.
Impotentia Coeundi, Due to Pathologic Changes in Posterior Urethra. J. Broadman, New York.—p. 200.

Surgery, Gynecology and Obstetrics, Chicago

34: 731-862 (June) 1923

Exstrophy of Bladder with Successful Transplantation of Ureters into Rectum: Report of Two Cases. E. H. Hutchins and A. F. Hutchins, Baltimore.—p. 731.
Modification of Kielland Operation for Prolapsus Uteri. H. J. Boldt, New York.—p. 742.
*Fractures in Transplanted Bone. S. L. Haas, San Francisco.—p. 749.
Efficient Surgeon. R. Bastianelli, Rome, Italy.—p. 762.
*Pathologic Anatomy of "Autointoxications" in Pregnancy and Childbirth. F. Harbitz, Christiania, Norway.—p. 767.
*Unilateral Intestinal Exclusion. G. E. Muennich, Valparaiso, Chile.—p. 773.
Tuberculosis of Genitalia. Review of Literature. B. Solomons, Dublin, Ireland.—p. 777.
*Malignant Neoplasia of Kidney Occurring in Infancy. J. H. Magoun, Jr., and W. C. MacCarty, Rochester, Minn.—p. 781.
Longitudinal Overgrowth of Long Bones. K. Speed, Chicago.—p. 787.
Fibroliposarcoma of Spermatic Cord. T. H. Kelley, Chicago.—p. 795.
Study in Puerperal Morbidity. E. Eno, Des Moines, Ia.—p. 797.
Tubal Twins and Tubal Pregnancy. L. B. Arey, Chicago.—p. 803.
*Autotransfusion. Report of Case. L. E. Burch, Nashville, Tenn.—p. 811.
Bismuth Paste Tumors. F. L. Lederer, Chicago.—p. 815.
Technic of Thyroidectomy. F. H. Lahey, Boston.—p. 825.
Fractured Spine: Consideration of Practical Care and Treatment. W. C. G. Kirchner, St. Louis.—p. 830.
*New Sacro-Iliac Support. J. McW. Berry, Albany, N. Y.—p. 835.
Instrument and Method for Aseptic Anastomosis of Intestine. F. E. B. Foley, St. Paul.—p. 836.

Fracture in Transplanted Bone.—Haas studied the healing of fractures in transplanted bone. He found that fractures in transplanted bone, even when buried in muscle, united firmly and in a similar manner to a fracture under normal conditions. Fractures in boiled transplanted bone never united nor showed any signs of proliferation or attempt at repair. Occasionally a small area resembling new bone was noticed on the surface, which bore no relation to the fracture and was possibly of metaplastic origin. Fractures in transplanted bone, in which one-half was boiled and the other half was alive, even when buried in muscle under favorable conditions united. It is believed that this is the crucial test of the independent, inherent osteogenetic powers of the cells of a transplanted piece of bone, and establishes beyond doubt the proof of this independency, and, furthermore, shows an additional reparative property of these same osteoblastic cells.

Pathology of Autointoxication of Pregnancy.—The most important anatomic changes in these conditions, Harbitz states, are degenerations in the liver and kidneys. As a rule, these changes are pronounced, without being specifically characteristic; they are present in cases of eclampsia, both those that do not have infarcts, as well as those that have more or less well-marked infarcts in the liver. Some cases studied showed hemorrhagic infarcts, but no eclampsia, and, on the other hand, one case was typical of eclampsia but with indications only of beginning infarct formation in the liver, the other changes being of the same kind as seen in other forms of toxicosis. Furthermore, there may be hemorrhages in different organs just as in eclampsia; in one case there

was a cerebral hemorrhage quite similar to that not infrequently found in eclampsia; another case is interesting because of the necroses and hemorrhages in the suprarenals, the case being one of eclampsia without infarcts. At times the changes in the kidneys may dominate the picture, while at other times the liver degeneration may be the most pronounced lesion. Two cases of excessive vomiting of pregnacy were of special interest. Degeneration of the kidneys was the most marked in one case, but both liver and kidneys were involved and there were present the symptoms of amaurosis without retinitis. In a few cases of hyperemesis, acute yellow atrophy of the liver occurred. Viewed as a whole, the cases present all possible transitions from genuine eclampsia, with or without characteristic anatomic changes, to the different other groupings. The anatomic picture in the different forms to a certain degree is similar, even if there are many variations, and it lies near at hand to think of all these cases as like eclampsia in being due to autointoxication.

Unilateral Intestinal Occlusion.—From his study of the subject Muennich concludes that unilateral exclusion of the intestine offers as great advantages as simple entero-anastomosis and as bilateral exclusion. It is indicated chiefly (*a*) in ileocecal tuberculosis if the extension of the disease or general condition of the patient makes resection impossible; (*b*) in cancer of the colon if the extension of the disease or the general condition of the patient makes resection impossible, and (*c*) in tumors the diagnosis of which is doubtful (inflammatory or malignant) and which produce stricture of the bowel. Unilateral exclusion is superior to simple anastomosis in that it eliminates any strain on the strictured area and to bilateral exclusion in that it avoids an external fistula.

Kidney Tumors in Children.—The material of the study made by Magoun and MacCarty consists of seven renal neoplasms from seven children (six females and one male); the eldest was 7 years, and the youngest 20 months of age. The growth was situated on the right side in five cases, and on the left in two. The largest tumor weighed 760 gm.

Autotransfusion After Splenectomy.—In a case of splenic anemia Burch removed the spleen. The operation was not only difficult but bloody. The large amount of blood that was lost in the abdomen during the operation was recovered by expressing the contents of the abdominal packs into a glass receptacle. A little over 800 c.c. of blood was recovered, and after this was citrated and strained it was injected into a vein at the elbow. At the time the transfusion was started the pulse was 140 and barely perceptible; at its completion the pulse was 102, strong, and the patient's color was good. There was no reaction following the transfusion. Operative recovery was unusually smooth and at the end of two weeks he was able to leave the hospital and return to his home.

New Sacro-Iliac Support.—Berry asserts that it is possible to support and hold together a disarticulated human pelvis by the pressure of one or two fingers on either side. The proper point for pressure on either side is limited to an area about 2.5 cm. in diameter on the outer surface of the ilium opposite the knee of the sacro-iliac joint. If pressure is applied over any other two areas than the above the pelvis falls apart. Corresponding areas on the surface of the body are situated just posterior to the upper end of the greater trochanter of the femur and there are normally depressions in the buttocks at those points. Berry says that many sacro-iliac supports that have been devised, press against the crest of the ilium or other parts of the pelvis and tend rather to displace than support the sacro-iliac joints. The object of the brace which Berry has devised is to give lateral support to the pelvis over the points at which experiment has shown that the disarticulated pelvis can be held together.

Texas State Journal of Medicine, Fort Worth

19: 59-156 (June) 1923

The Doctor. J. Becton, Greenville.—p. 71.
Responsibility of State for Health of Its Citizens. T. W. Davidson, Marshall.—p. 74.
Obligations of Laity to Scientific Medicine. W. B. Thorning, Houston.—p. 78.
In Memory of Our Dead. T. Dorbandt, San Antonio.—p. 82.
Work of American Medical Association. O. Dowling, New Orleans.—p. 84.

U. S. Naval Medical Bulletin, Washington, D. C.

18: 673-763 (June) 1923

Present Status of Anthelmintic Medication. M. C. Hall, Washington, D. C.—p. 673.
Roentgenologic Diagnosis of Bone Tumors. R. W. Hutchinson.—p. 679.
Hookworm Studies in American Samoa. D. Hunt.—p. 685.
Pulmonary Symptoms Incident to Infection of Accessory Sinuses of Nose. R. T. McIntire.—p. 688.
Local Anesthesia. O. D. King.—p. 693.
Diagnosis and Treatment of Otitis Media. A. G. Wenzell.—p. 698.

West Virginia Medical Journal, Huntington

17: 521-576 (June) 1923

Present Status of Diabetes. W. E. Vest, Huntington.—p. 521.
Spontaneous Version and Spontaneous Evolution. U. G. Cook, Beckley.—p. 524.
Case of Syphilis. E. S. Dupuy, Beckley.—p. 525.
Focal Infections. W. T. Riffe, Beckley.—p. 527.
Posthemorrhagic Leukocytosis. R. E. Stifel, Cleveland.—p. 530.
Medical Practitioner and American Society for Control of Cancer. J. E. Rush.—p. 532.
Recurrent Vomiting. C. L. Holland.—p. 536.
Some Common Errors in Care and Feeding of Infants and Young Children. A. A. Shawkey, Charleston.—p. 540.
Care and Feeding of Normal Infant. J. A. Striebach, Moundsville.—p. 547.

Wisconsin Medical Journal, Milwaukee

22: 1-58 (June) 1923

Lethargic Encephalitis. Difficulties in Differential Diagnosis and Late Sequelae. G. W. Hall, Chicago.—p. 1.
Diagnosis and Treatment of Uterine Retrodisplacements. C. H. Davis, Milwaukee.—p. 10.
Symptomatology, Diagnosis and Classification of Goiter. A. S. Jackson, and R. H. Jack, Madison, Wis.—p. 13.
Notes on South America. D. J. Hayes, Milwaukee.—p. 21.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

4: 105-176 (June) 1923

*Excretion of "Acetone" and Nitrogen in Nausea and Vomiting of Pregnancy. V. J. Harding and C. T. Potter.—p. 105.
*Relative Concentration Ratios of Some Constituents of Urine. II. Urea, Creatinin, Inorganic Phosphate and Uric Acid. S. W. F. Underhill.—p. 117.
*Method of Estimation of Diastase in Blood. G. M. Fyfe.—p. 127.
Precipitation of Colloidal Gold by Cerebrospinal Fluid; Diagnosis of Neurosyphilis. J. Mellanby and T. Anwyl-Davies.—p. 132.
Some New Principles in Bacterial Immunity; Their Experimental Foundation, and Their Application to Treatment of Refractory Infections. G. Dreyer.—p. 146.

Excretion of Acetone in Vomiting of Pregnancy.—The points emphasized by Harding and Potter are: the excretion of "acetone" in the majority of cases of nausea and vomiting of pregnancy parallels the clinical condition. The effect of abortion is to diminish the production of "acetone." Tissue destruction in nausea and vomiting of pregnancy when under the influence of small amounts of carbohydrate is governed by the demand for further supplies of carbohydrates. The results are similar to those observed in some cases of starvation, but in pregnancy the demand for carbohydrate, and consequently the disturbance following its lack, is more intense than in starvation.

Relative Concentration Ratios of Urinary Constituents.—It is considered by Underhill that the results of his experiments on the relative concentration ratios of urea, creatinin and inorganic phosphate are incompatible with the "filtration reabsorption" hypothesis of kidney function in its present form. It is concluded that the kidneys must actively secrete one or more of these substances into the urine.

Estimating Diastase in Blood.—By the adaptation of MacLean's method of blood sugar estimation, a means has been evolved by Fyfe which has the advantage of simplicity and accuracy, while it necessitates the minimum of discomfort to the patient. It also permits of an almost concurrent reading of the blood sugar and the blood diastase figures, dispensing with the need for two different technics. For the method proposed 0.2 c.c. blood only is required, an amount which can easily be obtained by pricking the ear or the finger. The final result depends on a determination of the patient's blood sugar

by MacLean's method, and on a second determination after 0.2 c.c. of the patient's blood has been incubated for half an hour at 37 C. with 1 c.c. of a 0.1 per cent. solution of starch.

British Journal of Ophthalmology, London

7: 257-304 (June) 1923

Watertight Suture in Trephining. R. F. Moore.—p. 257.
Hyperplasia of Hypophysis Cerebri? J. D. Cummins.—p. 260.
Treatment of Conical Cornea. C. Killick.—p. 264.
Blue Cataract. R. P. Ratnaker.—p. 269.
Third Dimension in Monocular Vision. C. H. Bryant.—p. 271.

British Medical Journal, London

2: 1081-1120 (June 30) 1923

Notes from Practice. W. J. Tyson.—p. 1081.
Herpes Zoster Ophthalmicus. S. Lodge and W. O. Lodge.—p. 1084.
Quinin Treatment of Chronic Malaria. T. S. Dixson.—p. 1087.
Autogenous Peg Graft in Certain Fractures of Femur. W. Mercer.—p. 1088.
Laryngeal Intubation in Anesthetics. S. Rowbotham.—p. 1090.
Cases of Chancre Redux. P. C. P. Ingram.—p. 1091.
Mediastinal Sarcoma with Venous Thrombosis. J. A. MacLaren.—p. 1092.
*Acute Puerperal Inversion of Uterus. R. R. Foote.—p. 1092.
*Idiosyncrasy to Mercury. F. Meiné.—p. 1092.

Acute Puerperal Inversion of Uterus.—The points of interest in Foote's case were the extreme gravity of the shock, the slight amount of hemorrhage, the rapid contraction of the uterus after reposition, and the good results which followed on early reposition with removal of the placenta as a preliminary.

Idiosyncrasy to Mercury.—Meiné cites the case of a young woman whose eyelids were edematous, with small pearlish blebs on the skin surface; there was a good deal of injection of the conjunctivae, with similar blebs on them. She complained of excessive watering of the eyes, blurred vision and photophobia. On the posterior surface of the auricle and skin adjoining were erythematous pearllike blebs. All down one side of the neck over the distribution of the fibers of the trapezius was a distinctly shotty erythema. The case appeared a puzzle until Meiné went into the question of occupation. The patient had lately been engaged as a dental nurse; she had been clearing up amalgam fillings, and had touched some globules of mercury. Evidently she had rubbed her eye with the finely divided metallic mercury and set up slight mercurial poisoning. She had some slight watering of the mouth, and the parotid was very tender. Evidently the case was one of special idiosyncrasy to mercury.

Glasgow Medical Journal

G: 337-405 (June) 1923

Mental Hygiene. D. K. Henderson.—p. 337.
Use of Blood Sugar Estimations in Investigation of Glycosuria. A. Patrick.—p. 361.
*Case of Advanced Chronic Interstitial Nephritis in Girl of Ten Years. J. Henderson.—p. 370.

Advanced Chronic Interstitial Nephritis in Child.—The associated symptoms in Henderson's case (girl, aged 10) were headache, sickness and vomiting, pains in the legs, cardiac discomfort and slight dyspnea. The patient had "fits" and occasionally hematuria. Associated with the hematuria there was violent sickness and vomiting, so that nothing in the way of food could be retained. The association of the main symptoms, the urinary findings, the hypertrophy of the left ventricle, and the high blood pressure (240 mm.) with a history of previous renal disease, seemed to point to a chronic nephritis of the azotemic variety as the basal lesion, with an acute exacerbation superadded. The Wassermann reaction was negative, as also was the Pirquet test. No growth was obtained on blood culture. The urine was examined on several occasions for tubercle bacilli, with negative result. Roentgenograms of the kidney region showed no abnormality. Ophthalmoscopic examination disclosed swelling of the disk in both eyes, with a few small hemorrhages and slight exudate in the neighborhood. The vessels were moderately tortuous. Between the disk and the macula in the right eye a fan-shaped area of white glistening spots was seen, while in the left eye there were two small patches of exudation at some distance below the disk. There was low hypermetropic astigmatism in both eyes. The progress of the case was steadily downward, with progressive wasting. There was complaint of intermittent headache, and there was occasional vomiting without relation to food. The daily output of urine never exceeded 30 ounces (900 c.c.); the albumen register was variable, but remained constantly low, while the blood almost disappeared. The patient inclined to be drowsy, and at times showed twitching of the eyes and facial muscles, with rigidity of the limbs. The day before death the drowsiness increased and gradually merged into complete coma, with recurrent general convulsions. Postmortem examination confirmed the clinical diagnosis.

Japan Medical World, Tokyo

3: 123-152 (June 15) 1923

*Experimental Study of Cells of Mucous Membrane of Digestive Tract as Toxin or Irritant, and Their Relation to Formation of Peptic Ulcer. Y. Myagawa, H. Murai and M. Terada.—p. 123.
My Method of Closure of Ureter. M. Kawazoe.—p. 135.
*Bacillus Pestis in Blood and Its Cultivation. O. Ohoto.—p. 136.

Experimental Production of Gastric Ulcer.—Having proved the formation of isogastrotoxin and iso-enterotoxin, Myagawa, Murai and Terada used these substances to produce ulcers in the digestive tract of normal animals. They also proved the formation of autogastrotoxin and auto-enterotoxin. By using them they were also able to form ulcer in the animal's own body. The formation of cytotoxin varies according to individuality. The susceptibility of other normal animals to cytotoxin also varies. The authors believe that the direct action of resorbed cell components of the digestive mucus membrane and gastrotoxin and enterotoxin are to be regarded each as a mode of the genesis of ulcers in the digestive tract. The direct action of resorbed cell components and the action of cytotoxin renders recovery of ulcer produced by various other causes very difficult. Isogastrotoxin of the rabbit can act on the stomach wall of a guinea-pig and cause ulcer. When enterotoxin and hepatoxin act on the stomach wall, often there are reactions, but the formation of ulcer may sometimes be seen. But such reactions are not so certain and constant as those of gastrotoxin on the stomach wall.

Pest Septicemia Not Infrequent Occurrence.—By cultivating *Bacillus pestis* in bile medium or 1 per cent. sodium citrate bouillon, Ohoto says, 72.2 per cent. of patients with plague gave positive results. Consequently, plague septicemia is not of infrequent occurrence and the prognosis is not absolutely bad.

Journal of Laryngology and Otology, Edinburgh

38: 285-340 (June) 1923

Case of Rhinosporidiosis. J. H. Ashworth and A. L. Turner.—p. 285.
Nasal Disfigurement and Correction. D. Guthrie.—p. 300.
Otitic Meningitis. G. J. Jenkins.—p. 304.
Boiler Makers' Deafness. R. Lake.—p. 323.

Journal of Physiology, London

57: 253-336 (June 8) 1923

Colloidal Alkali Reserve of Blood. T. H. Milroy.—p. 253.
Carbon Dioxid Partial Pressure in Body Cavities and Tissue Spaces Under Various Conditions. J. A. Campbell.—p. 273.
Creatin Formation in Frog's Muscle Contracted by Nicotin. T. Mitsuda and K. Uyeno.—p. 280.
Maximum Work of Human Muscles, Especially Flexors of Elbow. T. E. Hansen and J. Lindhard.—p. 287.
Calcium Chlorid Acidosis. J. B. S. Haldane, R. Hill and J. M. Luck.—p. 301.
Sympathetic Innervation and Process of Normal Salivary Secretion. W. E. Maevskij.—p. 307.
Creatin Formation During Tonic Muscle Contraction. K. Uyeno and T. Mitsuda.—p. 313.
*Modification of Action of Insulin by Pituitary Extract and Other Substances. J. H. Burn.—p. 318.
Effect of Temperature on Isolated Iris of Cat. C. A. Verbitzky.—p. 330.

Modification of Insulin by Pituitary Extract.—Burn found that subcutaneous injections of extract of posterior lobe of the pituitary gland given simultaneously with injections of insulin, diminish or abolish the fall of blood sugar produced by the latter. The doses of pituitary extract used do not, when given alone, produce a rise of blood sugar sufficient to explain this inhibition of the action of insulin as being the result of an algebraic sum. This effect is not produced by similar extracts of anterior lobe of pituitary, or of spleen, thyroid, brain tissue or thymus. Nor is it produced by his-

tamin. The property, in the case of posterior lobe extract, is destroyed by treatment with normal alkali in the cold. Pituitary extract removes the symptoms of hypoglycemic convulsions, causing a rapid elevation of the blood sugar. The effect of a small dose of insulin is greatly increased by previous intravenous injection of ergotoxin. Confirmation is given of the following points: (*a*) Pituitary extract inhibits epinephrin hyperglycemia and glycosuria; (*b*) ergotoxin abolishes epinephrin hyperglycemia and glycosuria; (*c*) insulin greatly reduces the hyperglycemic action of epinephrin. Instances are cited in which subcutaneous injections of pituitary extract in the normal animal led to a fall of blood sugar, though, as a rule, such injections cause a transient rise.

Journal of Tropical Medicine and Hygiene, London

24: 179-210 (June 1) 1923

Lichen Planus Hypertrophicus in Sudan. R. G. Archibald.—p. 179.
Erythrodermia Congenitale Ichthyosiforme in Arab Child. R. G. Archibald.—p. 180.
Xanthoma Tropicum (Juxta-Articular Nodules). R. W. Mendelson.—p. 181.
Dermal Leishmanoid. U. N. Brahmachari.—p. 182.
*Etiology of "Cute." A. Castellani and H. Tejera.—p. 183.
Acladium Castellanii (Piney). R. Craik.—p. 184.
Trichomycosis Axillaris Flava, Rubra and Nigra. A. Castellani.—p. 186.
*Etiologic Fungi of Tinea Versicolor and Tinea Flava. M. F. Schmitter.—p. 190.
*Phosphorus in Treatment of Dermal Leishmaniosis. A. Castellani.—p. 194.

Etiology of "Cute."—In Venezuela a skin disease called "cute" is fairly common, but so far very little attention has been paid to it and nothing is known about its etiology. The affection is characterized by the presence of bright yellow patches, with little or no desquamation, which have no tendency to spontaneous cure. The condition not rarely begins in childhood and spreads very slowly. The symptomatology of "cute" seems to be identical with the affection described by Castellani in Ceylon under the name of tinea flava. Microscopically, the fungus of "cute" seems also to be very similar or identical with the fungus of tinea flava.

Malassezia Furfur Causes Tinea Versicolor.—Schmitter asserts that tinea versicolor is not the harmless skin lesion usually supposed, but persons so affected are chronic carriers of a parasite which under favorable climatic conditions will cause heat rash and other skin lesions in themselves and others. From two cases of tinea flava he has cultivated a different species of a similar organism. The cultural findings harmonize with Castellani's distinction between tinea versicolor and tinea flava, hence Schmitter regards tentatively at least, the organisms of his cultures as *Malassezia furfur* and *Malassezia tropica*.

Phosphorated Oil Cures Oriental Sore.—Castellani adds a fourth case to the three previously reported in which the use of phosphorated oil effected a cure of oriental sore. Phosphorus is chemically closely related to antimony, and Castellani regards it as not improbable that it will be found useful in other diseases in which antimony has been used.

26: 211-226 (June 15) 1923

Treatment of Bilharziasis with Antimony. J. B. Christopherson.—p. 211.
Molluscan Hosts of Human Schistosomes. F. Milton.—p. 211.
Outbreak of Alastrim (Amaas) in Antigua. E. W. R. Branch and W. M. McDonald.—p. 214.
*Blood Studies in Smallpox, with Special Reference to Alastrim. W. H. Hoffmann.—p. 217.

Blood in Smallpox.—The results of the white counts in 300 cases, Hoffman says, was a leukopenia during the time of prodromal symptoms owing to the want of sufficient immunity reaction of the organism, which allows the virus to enter the body. Only after this time—that is, on the fourth day of the disease—is a strong increase of leukocytes observed, the number rising rapidly and being highest with averages of 17,000 from the ninth to the fourteenth day; but higher values up to 30,000 are frequent, and even 40,000 have been counted. The total count remains high during the whole of the third week with averages from 10,000 to 12,000 and in individual cases as many as 24,000 leukocytes. From the fourth week the total numbers sink and approach the normal, but from time to time there are periodical elevations with higher leukocytic values. During the whole period of the fourth, fifth and sixth week, the average numbers remain above the normal, between 9,000 and 12,000, without any apparent relation to the suppuration. At the end of the sixth week the blood has not yet returned to normal. The percentage of polymorphonuclears remains below normal.

Lancet, London

1: 1300-1348 (June 30) 1923

Surgery of Hepatic and Common Bile Ducts. W. J. Mayo.—p. 1299.
*Unexpected Death, Especially in Children, with Comments on Status Lymphaticus. E. Glynn and R. C. Dun.—p. 1302.
Metastatic Gonorrhea. T. Horder.—p. 1304.
Treatment by Electrolysis of Some Affections of Nose and Ear. A. R. Friel.—p. 1305.
Traumatic Asphyxia: Three Cases. A. Moncrieff.—p. 1307.
Case of Lymphemia. A. E. Russell, L. S. Dudgeon and A. L. Urquhart.—p. 1308.
*Radium in Treatment of Uterine Hemorrhage: Report on Forty-Five Cases. S. Forsdike.—p. 1309.
Detection of Coagulable Protein in Feces. R. Coope.—p. 1311.
Two Cases of Erythremia Treated by Roentgen Rays. E. J. Stofkind.—p. 1312.

Sudden Death in Children Not Always Due to Status Lymphaticus.—The expert pathologist after making a postmortem examination in a case of unexpected death, especially in an infant, Glynn and Dun point out, is often forced to admit that he really does not know the cause of death. The organs may appear normal—macroscopically, at any rate; or if lesions are present they may not seem sufficient to be fatal. On account of the youth of the patient, he is unable to take refuge in the diagnosis of "fatty heart"; instead he is tempted by that of "status lymphaticus." In such circumstances, however, there is always the possibility of an acute, or of a terminal infection, as illustrated by six examples cited. In one case, death resulted from terminal infection with *Streptococcus faecalis*. In a second case, death apparently resulted from status lymphaticus, but the child really died of acute meningo-encephalomyelitis, which proved rapidly fatal, partly because it attacked the medulla.

Radium Therapy of Uterine Hemorrhage.—Forsdike chooses radium treatment in all uncomplicated cases of severe and persistent hemorrhage due to chronic metritis, inflammatory disease of the tubes and ovaries constituting the sole contraindication. The radium menopause is not usually accompanied by any symptoms attributable to action on the ovaries, and of all methods it produces the least disturbance of the patient's economic life.

Practitioner, London

110: 409-472 (June) 1923

Puerperium. J. Phillips.—p. 409.
Primary Intrathoracic Neoplasm (Carcinoma; Sarcoma). A. J. S. Pinchin.—p. 422.
Tuberculous Meningitis: Is It a Preventable Disease? D. Paterson.—p. 431.
Appendicitis: Study in Histologic Physiology. O. C. Gruner.—p. 442.
Diet, Dentistry and Disease. J. Brown.—p. 448.
Putt's Caries Successfully Treated by Passive Congestion. V. S. Delany.—p. 455.
Movement to Expose Danger in Appendicitis. C. J. H. Aitken.—p. 457.
Organic Heart Disease in a Tuberculous Subject. H. J. Monypeny.—p. 458.

Tubercle, London

4: 385-432 (June) 1923

*Reproductive Mechanism as Factor in Female Phthisis Death Rate. S. L. Cummins.—p. 385.
Diagnosis and Treatment of Tuberculosis of Kidneys and Urinary Tract. (To be continued.) G. Ekehorn.—p. 393.
Roentgen-Ray Diagnosis of Pulmonary Tuberculosis. S. Melville.—p. 399.

Reproductive Mechanism as Factor in Female Phthisis Death Rate.—Cummins says that during the period of rapid growth and development that precedes, accompanies, and follows closely on the assumption of sexual maturity, and during the early years of the child-bearing period, the female phthisis death rate is higher than the male; in later age periods, especially at and after menopause, the female phthisis death rate falls rapidly while that of the male sex rises.

Archives de Médecine des Enfants, Paris

26: 197-264 (April) 1923

*Apical Pleuritis in Tuberculous Children. J. P. Garrahan.—p. 197.
*Pituitary Dystrophia in Pediatrics. P. Lereboullet.—p. 223.
Boarding Out Young Infants. J. Comby.—p. 242.

Apical Pleuritis in Tuberculous Children. — Garrahan describes seven cases and reproduces the roentgenograms. The typical clinical picture was dulness over one apex in infants and children who had enlarged tracheobronchial glands and a positive tuberculin reaction. The affection did not cause serious subjective disturbances, and it healed after a month or later (up to two years). He believes that the process is a pleuritis, which may be accompanied by a superficial pulmonary affection, and is not an infiltration of the pulmonary lobe (Eliasberg's and Neuland's epituberculous infiltration).

Pituitary Dystrophia in Pediatrics.—Lereboullet admits that the adiposogenital syndrome is probably due to an affection of the tubero-infundibular region of the brain and not to disturbances of the posterior lobe of the pituitary gland. Or it may be due to a primary affection of the sex glands. Diabetes insipidus is also due to an affection of the tuber cinereum and serves only to indicate the possibility of a pituitary lesion. It is possible, however, that the pituitary secretion acts on the nerve centers involved.

Bulletin de l'Académie de Médecine, Paris

89: 499-517 (May 8) 1923

*"Toxic Poliomyelitis." Ribemont-Dessaignes.—p. 506.
Three Years of Military Expert Control of Veterans with Pulmonary Tuberculosis. L. Bernard.—p. 507.
*Respiratory Alertness. G. Rosenthal.—p. 515.

"Toxic Poliomyelitis Due to Poisonous Mushrooms."—Ribemont-Dessaignes believes that mushrooms are either poisonous all the time, or not at all. He attributes contrary observations to lack of experience in determining the species.

Respiratory Alertness: Its Value in Vocal Education.—Rosenthal uses the term, *souplesse respiratoire* for the ability to vary the rapidity and extent of the respiratory movements. A normal subject can demonstrate his vital capacity in five to eight seconds as well as in twenty to thirty seconds. Some persons are able to exceed these figures. One liter of air should be expired in three as well as in fifteen seconds. This respiratory alertness is independent of the vital capacity. Many excellent singers have only a middle vital capacity, (2.5 or 2.75 liters), but a well developed respiratory alertness.

Bulletins de la Société Médicale des Hôpitaux, Paris

47: 549-608 (April 20) 1923

*Ambard's Constant in Orthostatic Albuminuria. Aubertin.—p. 549.
*"Pseudosurgical" Tertiary Syphilis of Liver. Denéchau et al.—p. 556.
Three Cases of Acute Leukemia. E. Rivalier and E. Hartmann.—p. 564.
*Pulmonary Gangrene Treated by "Larding." Caussade and Rosenthal.—p. 575.
*Functional Aortic Insufficiency. Laubry and Doumer.—p. 584.
Spirillocidal Action of Arsenicals by the Mouth. Sézary and Pomaret.—p. 595.
Atypical Lymphocytoma of Mediastinum. Minvielle and Colombies.—p. 598.
Obliteration of Superior Vena Cava Due to Syphilis. Ruitinga.—p. 602.
Syphilis of Ponto-Cerebellar Type. Guillain et al.—p. 605.

Ureosecretory Coefficient in Orthostatic Albuminuria.—Aubertin finds that determination of the Ambard constant is a valuable aid in differentiation between harmless orthostatic albuminuria, and a similar condition which may be a sign of mild nephritis.

Four Cases of "Pseudosurgical" Tertiary Syphilis of Liver.—Denéchau, Fruchaud-Brin and Agoulon report on four cases of syphilis of the liver with severe pains. Two of the patients were needlessly operated on; one escaped the operation because his condition was too serious, and another because he refused. All recovered after specific treatment. Severe pains with a tumor in the epigastrium and irregular fever may be due to syphilis of the liver. In these cases the Wassermann test was negative in two; the interval since infection ranged from two to seven years.

Pulmonary Gangrene Treated by "Larding."—Caussade and Rosenthal designate by the word "larding," transthoracal injections of drugs into a pulmonary infectious focus. They report a case of pulmonary gangrene in which recovery followed two such injections.

Functional Aortic Insufficiency and Its Pathogenesis.—Laubry and Doumer discuss three cases with necropsy which show the possibility of functional insufficiency of the aortic orifice. Hypertension is not an essential condition for it. They discuss the different theories on the pathogenesis of the affection, which they attribute to a dilatation of the heart and fatigue of the muscles which reenforce the orifice.

Encéphale, Paris

18: 217-280 (April) 1923

Thought and Attitudes in Autism. J. Regues de Fursac and E. Minkowski.—p. 217.
Crossed Chorea. J. Lhermitte and A. Bourguina.—p. 228.
Syphilis of Small Vessels of Brain. C. I. Urechia and N. Elekes.—p. 240.
Brain Tumor Inducing Apraxia, Agraphia and Alexia. Papadato.—p. 253.

18: 281-352 (May) 1923

Glioma of Cerebellopontine Angle. André-Thomas.—p. 281.
Psychologic Analysis in Case of Aphasia. W. van Woerkom.—p. 286.
*Vertebral Syphilis of Scoliosis Type. Roger et al.—p. 305.
Rhythmic Synchronism of Unilateral Endocrine Disturbances and Melancholia. A. Prince.—p. 312.
Delirium of Pathologic Interpretation of Symptoms. R. Targowla.—p. 319.
*Mirror Hallucinations from Cranial Trauma. H. Nouet.—p. 327.
Pluriglandular Syndrome with Infantilism and Psychosis. Paulian and Grigoresco.—p. 329.

Associated Neurosyphilis and Syphilitic Vertebral Process.—Roger, Aymès and Pourtal describe a case of nervous syphilis and osteo-arthropathy of the spine with tendency to scoliosis in a man aged 49. The spinal affection began to cause symptoms in 1916, with compression of the spinal cord and complete paraplegia and anesthesia. Recovery followed bed rest and arsenic-mercury treatment. There was a mild flaring up of the spinal process, accompanied by optic nerve symptoms, four years later. This also yielded to treatment except the optic nerve symptoms persisted. More recent, less serious recurring attacks have also yielded to specific treatment. The decline in intensity of these recurring attacks of pain and paresis is in marked contrast to the usual progressive course of spinal cord disease. The nervous disturbances seem to be connected more with the bone lesions than with the meningomedullary syphilis. They interpret the case as a combination of neurosyphilis (optic nerve) with a syphilitic vertebral affection compressing the spinal cord and roots in the dorsal region.

Mirror Hallucinations from Cranial Traumatism.—Nouet reports an unusual case of mirror hallucination in a man wounded in the right temple during the war. Serious encephalitis was followed by disturbances of memory and dysarthria, but he improved gradually. Two years later he began to see images of his own face, or figure, as in a mirror, sometimes while walking on the street and sometimes indoors. This sensory aura included, besides the visual hallucination, an odor of wintergreen, and was accompanied by an impulse to run straight ahead without aim for a few seconds. He has neither vertigo nor encephalitis, and remembers his actions perfectly. Contrary to the cases of mirror hallucinations previously published, the man is not addicted to alcohol or any drug. The condition is the same now as three years ago.

Journal de Médecine, Lyon

4: 291-326 (May 20) 1923

*Urethral Herpes and Herpetic Urethritis. J. Nicolas et al.—p. 291.
*Protein Therapy in Gonorrheal Epididymitis. L. Bonnet.—p. 299.
*Case of Febrile Syphilis. M. Favre and N. Contamin.—p. 303.
Arsenic, Mercury or Bismuth in Syphilis? Gaté and Pillon.—p. 313.
Diagnosis of Inguinal Adenopathies. Massia and Lacassagne.—p. 319.

Urethral Herpes and Herpetic Urethritis.—Nicolas, Gaté and Papacostas describe six cases of recurrent genital herpes, generally accompanied by neuralgic pains and urethral secretions, which they have studied microscopically. Relapses in genital herpes are frequent, at times incessant, and very regular. The symptoms of urethritis usually do not appear until after several attacks of herpes. "Touch me not" therapy is advised, since herpetic urethritis, like genital herpes, will heal spontaneously if not needlessly irritated. Its recurrent

nature may be counteracted by change in habits, more rational diet, and proper hygiene. The urethra should be given a rest, with exclusion of irritating sexual relations, congestive genital excitement, antiseptic washes and caustic injections.

Treatment of Epididymitis by Milk Injections.—Bonnet used parenteral milk injections in treatment of a case of gonorrheal epididymitis, and in five cases of orchitis. He gave two or three injections of 5 c.c., with intervals of two or three days, examining the patients beforehand for tuberculosis. The injections relieved the pain and improved the inflammation, but he is not prepared to say that they cure all cases of orchitis.

Syphilitic Fever.—Favre and Contamin report among others a case of extremely high and irregular fever of six months' duration in a man who had lived twelve years in Africa. Total failure of quinin and other antipyretics, emaciation, constitutional disturbances and general decline indicated febrile tuberculosis. Manifestations of painful and generalized multiple periostitis, enlargement of liver and spleen and an old genital lesion suggested syphilis. The fever and bone pains disappeared rapidly after specific treatment. They say that syphilitic fever is characterized by the dissociation of the thermal and functional manifestations, as a rule, but that it may appear in any form. Sometimes it evolves from slightly febrile states accompanied by functional and general disturbances, but without headache, prostration or anorexia, while at other times it manifests itself as solely a thermometer fever. Duration of weeks or months with visceral syndromes of obscure origin indicates syphilitic fever. It resists antipyretics but yields to mercury, or to arsenic, even after it has resisted mercury.

Journal d'Urologie Médicale et Chirurgicale, Paris

15: 249-336 (April) 1923

*Excess of Uric Acid in the Blood. E. Jeanbrau et al.—p. 249.
*Urinary Complications of Fracture of the Pelvis. P. Guibal.—p. 265.
Urethrocele in Female Urethra. M. Lebrun.—p. 275. Cont'd.
How to Detect Short-Circuiting in a Cystoscope. J. Martin.—p. 295.

Factors Influencing Retention of Uric Acid.—Jeanbrau, Cristol and Nikolitch's 300 tests for azotemia and uric-acidemia demonstrated that circulatory and mechanical factors, as well as renal and tissue factors, are often involved in the retention of uric acid. The distention of the bladder from chronic retention of urine with strictures, etc., provides the mechanical obstacle. The excessive uric acid content of the blood resulting from this mechanical factor, alone or with a circulatory factor impeding elimination of water, subsides after these factors have been excluded. Experience at Montpellier confirms the belief that a rise in the uric acid content of the blood is an early and reliable sign of reduction of the permeability of the kidneys.

Urinary Complications of Fracture of the Pelvis.—Guibal says that injury of the urinary apparatus was found only in two of his seven cases of fracture of the pelvis last year; in these two the fracture was comparatively insignificant. If the urethra is ruptured, suprapubic cystostomy, or at least puncture, should be done at once. Clear urine shows that the obstruction is below, and this can await subsidence of the shock. Complete recovery followed the operative measures in two cases described in detail.

Presse Médicale, Paris

31: 537-548 (June 16) 1923

Is Turpentine a Factor in the Pathology of Painters? F. Heim et al.—p. 537.
Pathogenic Unity of Tumors in the Jaw. Delater and Bercher.—p. 539.
Recent Research on Blood Grouping. J. Mouzon.—p. 541.

31: 549-560 (June 20) 1923

Leprosy. G. Delamare.—p. 549.
*Chronic Tuberculous Splenopneumonia. Armand-Delille et al.—p. 551.
*Methylene Blue Test for Reducing Power. E. Schulmann and L. J. Besançon.—p. 553.
*Asthma and Loss of Vagus-Sympathetic Balance. J. Galup.—p. 555.

31: 561-572 (June 23) 1923

Pathologic Cartilage Growths. A. Policard and R. Leriche.—p. 561.
Localization of Visual Aphasia. L. Poussepp.—p. 564.
Postoperative Shock. Misrachi.—p. 565.
Ethylhydrocuprein in Hay Fever. L. Cheinisse.—p. 567.

Chronic Tuberculous Engorgement and Condensation of Child Lung.—Armand-Delille and his co-workers encountered five children with a form of chronic splenopneumonia in a group of 230 children with lung affections. One entire half of the thorax was almost uniformly opaque, with dulness, and the diaphragm immovable on that side, but the course was extremely slow and torpid. The general condition kept good, although tubercle bacilli were found in two. These children were all about 10 years old, and in some the condition has persisted unmodified during the two years to date; in others an extensive fibrous reaction of the lung seems inevitable, while in still others the lung has cleared up completely, the diaphragm functioning normally. The costodiaphragmatic sinuses were normal throughout in all, which excluded pleural effusion. Artificial pneumothorax—tried in two cases—showed the pleural sheets nonadherent although it proved impossible to induce pneumothorax. They ascribe the condition to incomplete allergy: The defensive reaction is not limited to the point of inoculation, but induces a diffuse process of congestion throughout the entire lung, least pronounced toward the apex.

Methylene Blue Test of Organic Reducing Powers.—The curve of methylene blue in the urine and blood after injection or ingestion seems to be a gage of the intensity of the intra-organic phenomena of oxidation and reduction. Schulmann and Bezançon describe experimental and clinical experiences in this line.

The Vegetative Nervous System in Asthma.—Galup found the oculocardiac reflex exaggerated in 35.52 per cent. of 152 asthma patients, and inverted or abolished in 34.88 per cent. The balance between the vagus and the sympathetic was thus upset in 70 per cent., either the vagus or the sympathetic being abnormally predominant at the moment. The oculocardiac reflex can thus serve as a guide for symptomatic treatment. Causal treatment includes organotherapy and courses of mineral waters.

Revue de Chirurgie, Paris

60: 499-552, 1922

*Radium Treatment of Cancer. J. Roussy and R. Leroux.—p. 499.
*Jackson's Membrane. Mutel and Fourche.—p. 509.
*Peptic Ulcer in Meckel's Diverticulum. E. C. Megevand and R. Dunant.—p. 536.

Radium Treatment of Cancer of Uterine Cervix.—Roussy and Leroux warn that when the connective tissue and the blood are substandard at the time of the radium treatment, they are not only more or less incapable of aiding in the processes of repair, but are liable to be directly injured by the rays, as they lack the normal resisting powers. Hence, substandard histologic findings in the local connective tissue warn for extra cautious doses, especially when the hematologic formula shows conditions below par. By "hematologic formula" they mean repeated examination not only of the blood count and color index, but also of the time curve of sedimentation of the erythrocytes, the resistance of the corpuscles, coagulation conditions and the heterolysin content.

Jackson's Membrane.—The research and experiences related by Mutel and Fourche apparently sustain their contention that Jackson's membrane is merely an exaggeration of the normal fold that connects the colon with the abdominal wall, with or without additional connection with the kidney. It is thus a normal anatomic formation found in 15 per cent. of fetuses and the new-born. The interstitial growth of the posterior wall of the colon, between the fold and its insertion in the mesentery, explains the exaggeration of the fold.

Peptic Ulcer in Meckel's Diverticulum.—The diverticulum was lined throughout with mucous membrane exactly like that in the stomach. The patient was a man aged 32, and there was a history from childhood of occasional bloody stools. Intense abdominal pain and profuse intestinal hemorrhages led to discovery of an acute, bleeding ulcer in Meckel's diverticulum. There was no sign of perforation; the hemorrhages dominated the clinical picture. Resection of the diverticulum cured the tendency to intestinal hemorrhages and other vague gastro-intestinal disturbances.

Revue Franç. de Gynécologie et d'Obstét., Paris

18: 257-288 (April 25) 1923

*Low Cesarean Section. M. Reeb.—p. 257.
Cystic Sacrococcygeal Tumor. F. Chatillon.—p. 264.

Low Cesarean Section.—Reeb reports nine recoveries after low transperitoneal cesarean section, and one death from pulmonary embolism occurring the sixteenth day after the operation.

Schweizerische medizinische Wochenschrift, Basel

53: 441-460 (May 3) 1923

*Lymphangitic Abscess of Neck. P. Clairmont.—p. 441.
*Diagnosis of Smallpox and Varicella. Tièche.—p. 448.
Rachitis. S. Chapuis.—p. 451.

Lymphangitic Abscess of Neck.—Clairmont describes typical abscesses in the lower anterior triangular space between the thyroid gland and the sternocleidomastoid muscle. These abscesses are situated under the middle aponeurosis of the neck, behind the small muscles. Clinically, they resemble suppurative thyroiditis. The prognosis is good if the incision is made in time.

Diagnosis of Smallpox, Modified Smallpox and Varicella.—Tièche describes the mild cases of smallpox which occurred in the last two years in the German cantons of Switzerland, where compulsory vaccination has been repealed. The infection resembles varioloid in vaccinated persons. He calls it modified smallpox. The exanthem in varicella is "centripetal": many vesicles on the trunk, few on the face and extremities. Smallpox prefers the face, back, hands and feet; very few pustules are on the abdomen. In the beginning of the eruption, both smallpox and varicella may appear as small patches of roseola all over the body. In varicella, we find in the center of some of the roseolas a little vesicle, which breaks easily, if compressed. The nodule in smallpox is resistant, and develops slower. A developed vesicle in varicella can be "wiped off" by a strong gliding pressure of a finger. This is a very important differential sign against smallpox.

Policlinico, Rome

30: 585-615 (May 7) 1923

Causes of Error in Roentgenography of Spine. F. Saraceni.—p. 585.
*Ether in Acute Purulent Peritonitis. V. Caccini.—p. 590. Conc'n.
*Autophagia and Automutilation in Mental Disorders. G. Roasenda.—p. 594.
Prophylaxis of Trachoma. A. Rosica.—p. 595.

Ether in Local Treatment of Acute Purulent Peritonitis.—Saraceni extols the sedative action of the ether which permits sleep, while the biologic defensive forces are stimulated. He testifies further to the effectual disinfection realized by the ether, saying that it transforms the sterile exudate into an autovaccine and auto-antiserum, and these act further by parenteral protein therapy. The ether aids in disintegration of the pus, favoring its absorption. The technic is that published by Morestin, flooding the peritoneum with from 100 to 300 c.c. of ether after the abdominal cavity has been cleaned out and dried, and the laparotomy incision sutured, with or without drainage. He adds that the rejection of this method by the French Surgical Congress in 1914, is only another instance of "the prophet in his own country."

Autophagia and Automutilations in Dements and Epileptics.—Roasendi reports two cases of automutilation in general paralysis. One of the men cut off a finger to suck the blood; the other man ligated the scrotum: both with hope of therapeutic effect. In a third case, a young woman during an epileptic equivalent sliced off a toe with a painful corn. The hemorrhage very nearly proved fatal, but the epilepsy seemed to be arrested thereafter, suggesting a therapeutic influence from the profuse hemorrhage. There have been no further equivalents during the years since.

Rivista di Clinica Pediatrica, Florence

21: 129-192 (March) 1923

Cerebrospinal Meningitis in Young Children. E. T. Palmegiani.—p. 129.
*Variation in Perspiration in Infants. A. Borrino.—p. 151.

Variations of Insensible Perspiration and Their Pathologic Import in Infants.—Borrino has, with Galeotti's apparatus, observed great variations of the insensible perspiration and of the temperature of the skin in different conditions of clothing. Heavy clothes induce in new-born children as well as in older infants and children a rapid increase of the skin temperature and an increase of the insensible perspiration, especially with high room temperature. These scientifically controlled data confirm the extreme importance of clothing as affecting the water metabolism and heat regulation in early life, and in the special pathology of the infant during hot weather, and the mortality from gastro-enteritis.

Anales de la Facultad de Medicina, Lima

5: 269-343 (Dec.) 1922

Tribute to Pasteur. Francisco Graña.—p. 307.
*Peruvian Verruca Superimposed on Chronic Malaria. J. Arce.—p. 332.

Peruvian Verruca Superimposed on Chronic Malaria.—The differential diagnosis was unusually difficult as the malarial attacks were of the pernicious, comatose type, accompanied by symptoms of Peruvian verruca, and the onset had followed the day after childbirth. Under quinin, recovery soon followed. Arce emphasizes that Peruvian verruca alone does not cause the spleen to enlarge.

Crónica Médica, Lima

40: 85-124 (March) 1923

*Cure of Abscess in Liver Under Emetin. E. Escomel.—p. 85.
*Turpentine in Treatment of Diarrhea. Id.—p. 92.
Factors in Transmission of Hookworm in Moyobamba. Buenaventura Burga.—p. 95.

40: 125-156 (April) 1923

Addison's Disease with Vagosympathetic Hypertonia. M. Gonzales Olaechea.—p. 125.
Nephrectomy for Renal Tuberculosis. E. P. Manchego.—p. 129.
Certain Brief Pyrexias. Sir P. W. Bassett-Smith.—p. 135.

40: 157-192 (May) 1923

The Teaching of Applied Anatomy. C. Morales Macedo.—p. 157.
Treatment of Malaria. E. Escomel.—p. 167.
Vaccine Therapy of Pulmonary Affections. J. Minet.—p. 171.

Emetin Treatment of Suppuration in the Liver.—Escomel now has a record of twenty-five patients with amebic suppurative hepatitis who recovered under emetin treatment alone, without operation. He has demonstrated that the ameba entering by the mouth has its vitality suspended by normal gastric juice. It becomes encysted, and passes in this torpid condition through the bowel until it reaches the rectum. Here conditions are favorable for the ameba, and it rouses from the latent phase with full vitality, as the clinical picture of dysentery soon testifies. Abuse of red pepper predisposes the intestines to invasion by the ameba, and explains the local prevalence of abscess in the liver in his district. The ameba is often found in alveolar pyorrhea in countries where it is endemic, and it may reach the liver before the dysentery stage has developed. On suspicion of amebiasis of the liver, with or without a history of dysentery, he gives a daily subcutaneous injection of 0.02 gm. of emetin with the same amount of spartein to counteract the depressing action on the heart of the emetin. If there is no pronounced improvement after four days of this treatment, the conclusion is inevitable that the ameba is not responsible for the hepatitis. Emetin in liquid form rapidly loses its potency, even in ampules. In tablet form it retains all its destructive action on protozoa. He boils the two tablets in 2 c.c. of distilled water, and injects the fluid subcutaneously or by the vein. The number of injections required varied from ten to thirty. Of late he has preferred the intravenous route. The dose is reduced proportionally for children. He has never had occasion to puncture or open the abscess; the pus was gradually absorbed after the death of the amebas. In another patient, a large abscess in the cecum and in the sigmoid region subsided likewise under emetin which cured at the same time the rebellious dysentery of a year's standing.

Turpentine Treatment of Diarrhea.—Escomel declares that the rectum is like an incubator for certain intestinal parasites. They find there an exceptionally favorable culture medium and easy access by the veins to the liver or by the lymphatics to the bladder. He describes his turpentine method of treating diarrhea, which, he says, has proved specific for trichomoniasis, and has cured 90 per cent. of all forms of bacterial

diarrhea. The first three days the patient takes a spoonful every two hours of a mixture of 150 gm. of plain gum solution and 12 gm. of paregoric elixir with from 2 to 4 gm. of oil of turpentine. Morning and evening an evacuating enema is taken of 1 or 2 liters of a decoction of ratanhia or eucalyptus, followed by an enema to be retained: 4 spoonfuls of boiled water containing the yolk of an egg beaten up with from 20 to 40 drops of oil of turpentine and from 10 to 25 drops of laudanum. The food should be only a glass of fresh milk, boiled, with 4 spoonfuls of lime water and a little potato or other gruel every three hours, followed by a tablet containing 0.2 gm. of pancreatin and sodium bicarbonate; 0.4 gm. pepsin, and 0.1 gm. diastase. The beverage should be rice water, made with linseed, gelatin and toasted bread. The fruit of the quince can be taken if desired. Hot applications should be applied every three hours to the abdomen, and it should be kept covered with flannel. The patient should repose during the treatment. If three days of this treatment do not cure, some other cause than a simple parasitic infection of the intestines must be responsible for the disturbances.

Repertorio de Medicina y Cirugía, Bogota

14: 207-246 (March) 1923

Child Welfare Work in Colombia. J. M. Montoya and J. Manrique.—p. 207.
*Essential Asthma. L. F. Calderón.—p. 211.
Elusive Ulcer of the Bladder. J. E. Cavelier.—p. 217.
A Salt-Free Diet in Mental Disease. P. A. Ilinás.—p. 221.

Essential Asthma.—Calderón has encountered three cases of intermittent and periodical dyspnea during expiration, in young women, with a slightly febrile temperature at first. The only physical signs were slight cyanosis of the lips and variable sibilant râles scattered through both sides of the chest. There was little or no dulness on percussion. Each paroxysm of the asthma exhausts the patient, but in the intervals she attends to her usual duties, although weak. The differential diagnosis is still obscure, and no treatment has been effective.

Semana Médica, Buenos Aires

1: 833-884 (May 3) 1923

*Volkmann's Ischemic Contracture. J. M. Jorge.—p. 833.
Pharmacology of Two Bismuth Preparations. O. Calcagno.—p. 843.
*Secondary Meningeal Reactions. J. M. Macera.—p. 867.
Unusual Forms of Tuberculosis in Children. M. E. Benitez.—p. 871.
Oxidizing Action of Sodium Perborate on Benzoic Acid. M. Troncoso Serantes.—p. 874.
Trocar-Cannula for Maxillary Sinus. R. Becco.—p. 876.

Volkmann's Ischemic Contracture.—Jorge remarks that the prognosis after operative treatment depends not only on the duration and extent of the contracture and loss of elasticity, but also on the patient's perseverance in the exercises afterward. An overtight bandage is usually responsible for the ischemia, but a traumatic hematoma or swelling may suffice, even without a bandage. He advises keeping the limb raised as the compression is removed, and afterward, to prevent overstretching of the vessels. The deep flexor and the adductor muscles suffer most, and it may be a wise precaution to slit the anterior aponeurosis at several points, the minute incisions serving to drain the deep infiltrations, or to make a broad zigzag transverse incision, suturing the skin with interrupted sutures. Hot baths, exercises, suspension of the limb, adjustable apparatus to aid in stretching the retracted muscles, and massage may succeed alone, but if the contracture shows no signs of yielding, he advises not to wait too long before resecting the diaphysis or doing tenotomy. He gives details of two cases with tenotomy, and of seven with resection of bone, all in the forearm, the ages of the patients being from 9 to 18. The overtight bandage or cast had caused severe pain, and had been left in place for from three to twenty days.

Meningeal Reactions in Children Secondary to Infectious Processes Elsewhere.—Macera warns that the prognosis must be guarded as, although most of the children recover, yet one died during the meningeal phase in the five cases he has encountered. The primary affection was pneumonia, inherited syphilis or typhoid in his cases, and the clinical picture of meningitis had preceded the recognized manifestations of the primary affection.

Beiträge zur klinischen Chirurgie, Tübingen

129: 245-482, 1923

Vessels of Lower End of Femur in Relation to Its Pathology. A. Nussbaum.—p. 245.
*Surgery of Blood Vessels. W. Rieder.—p. 282.
Diagnosis of Wound Diphtheria. W. Rieder.—p. 296.
Diagnosis of Duodenal Ulcer. A. Beck.—p. 300.
*Compensatory Hypertrophy of Suprarenals. O. Specht.—p. 311.
*Contrast Suspension for Pyelography. I. Szabó.—p. 329.
Paranephritic Abscess. M. Baumann.—p. 337.
Technic for Suturing Vas Deferens. H. Schmerz.—p. 342.
*Late Injury of Spinal Cord from Scoliosis. W. Jaroschy.—p. 348.
Suture without Drainage after Cholecystectomy. F. C. Hilgenberg.—p. 375.
Insufficiency of the Liver from Surgical Standpoint. K. Laqua.—p. 382.
Experiments with Snake Venoms on Animals. H. Herfarth.—p. 397.
The Wildbolz Own Urine Reaction. H. Schünemann.—p. 403.
*Plastic Operation to Enlarge the Bladder. K. Scheele.—p. 414.
*Resuscitation of the Heart. Harttung.—p. 423.
Acute Serous Peritonitis. E. Melchior.—p. 443.
Treatment of Tuberculous Peritonitis with Exudate. Hufschmid.—p. 449.
Ileocecal Tuberculosis. Becker.—p. 451.
Rupture of Bladder with Vaginal Defect. Schubert.—p. 454.
Thoracoplastic Operations in Pulmonary Tuberculosis. Hauke.—p. 456.
Direct Fracture of Vertebrae. Radmann.—p. 466.
Transplantation of the Knee Tendons. Seiffert jun.—p. 471.
Nail Extension of the Heel. Hertel.—p. 476.
Resection of Wall of Chest with Mammary Cancer. F. Wiener.—p. 479.

Wounds of Vessels.—Rieder analyzes the experiences at Hamburg with 117 wounds of arteries from trauma or operation, in war and in peace times. Small arteries, especially the paired arteries on the limbs and the external carotid, can be safely ligated. An attempt to suture, with or without a plastic operation, should be made, unless infection contraindicates suturing. When ligation was the only resource, and the ligature was applied very slowly, to ward off thrombosis, gangrene developed in only 2 of 19 arm ligature cases (both subclavian); in 3 of 19 femoral ligature cases, and 4 in 10 popliteal. Encephalomalacia developed in only 6 of 36 cases of ligation of the carotid, and in these cachexia or advanced age had rendered the prognosis graver. Improvement of the collateral circulation was realized, before the operation, by systematic compression. He expatiates on the direct life-saving action of 10 per cent. solution of glucose by the vein after extensive loss of blood; it supplies glycogen to the heart muscle, and improves the circulation. The longer the interval between the injury and the operation, the better the prognosis.

Compensatory Hypertrophy of the Suprarenals.—Specht's research on guinea-pigs and rabbits confirms the view that compensatory hypertrophy of the remaining suprarenal ensues after removal of one. This occurs even in adult animals, and it probably occurs also in man.

Contrast Suspension for Pyelography.—Szabó protests against the use of colloidal suspensions, saying that only solutions are comparatively harmless for injection into the kidney pelvis. He advocates sodium bromid, but says that he has used potassium bromid in 152 cases and never observed any of the local or general reactions characteristic of the colloidal suspensions. He regards as extremely important the rinsing out of the kidney pelvis with sterile water afterward.

Tardy Injury of Spinal Cord from Congenital Scoliosis.—Jaroschy describes his operative treatment in two cases, and compares them with the few similar cases on record. In his cases the severe spastic paraplegia of the legs developed at the ages of 14 and 17. Laminectomy cured the paraplegia completely in one case, and materially improved conditions in the other, in which the paraplegia was of longer standing.

Plastic Operation to Enlarge the Bladder.—Cicatricial contraction after a severe gangrenous cystitis was causing serious symptoms from the inadequate capacity of the bladder. Scheele enlarged the bladder by fastening to it a loop of small intestine sutured in the form of a ring.

Intracardiac Injections.—Harttung has found records of seventy-six cases in which massage of the heart has been applied after apparent death, with resuscitation in thirty-five, and permanent recovery in twenty. Only massage from below the diaphragm proved effectual, but even at the best this is fraught with grave danger. In Amreich's case, the heart

action was restored by massage and injection of epinephrin, but the revival was only for an hour, and necropsy revealed laceration of a valve. Efforts to resuscitate a sound heart are indicated in case of death from suffocation, from freezing, from shock (including collapse at operations) or from the effect of an anesthetic. The interval must be less than ten minutes, as otherwise brain functioning is irreparably lost. The intracardiac injection is less dangerous than massage. In one of two personal cases described, the resuscitation was permanent; in the other it lasted six hours. He injected 1 c.c. of the 1 per thousand solution of epinephrin into the right ventricle through the fourth interspace, close to the sternum.

Deutsches Archiv für klinische Medizin, Leipzig

142: 145-240 (April 30) 1923

*Poikilopicry in Nephritis. H. Straub.—p. 145.
*Studies on Bulbus Scillae. E. Boden and P. Neukirch.—p. 173.
Discontinuous Vibration in Diagnosis. R. Geigel.—p. 183.
Clinic of Heart Infarction and Epistenocardiac Pericarditis. R. D. Lorwenberg.—p. 189.
Acute Infectious Myeloblastosis in Blood; Recovery. R. Hopmann.—p. 196.
*Microscopic Observations on Capillaries. Jürgensen.—p. 203.
*Action of Intravenous Injections of Sodium Chlorid. Prigge.—p. 216.
Leukemic Reticule-Endotheliosis. O. Ewald.—p. 222.
Fatty Degeneration of Parenchymatous Organs. O. Gross.—p. 229.

Poikilopicry in Nephritis.—Straub determined the concentrations of chlorids, bicarbonates, soluble phosphorus, residual nitrogen and the molecular concentration in serums from nephritics. He had very variable results, and calls the disturbances of the concentration of anions, poikilopicria. The explanation of the irregular excess or deficiency of carbon dioxid in the blood of these patients is uncertain, until all the substances present in the serum have been examined.

Clinical and Experimental Studies on Squill.—Boden and Neukirch had favorable results with bulbus scillae in degeneration of heart muscle.

Microscopic Observations on the Capillaries and Vasomotors.—Jürgensen finds that systematic microscopic examinations of the capillaries are valuable in early diagnosis of vasomotor disturbances.

Action of Intravenous Injections of Sodium Chlorid on Production of Antibodies.—Prigge found that intravenous injections of large amounts of sodium chlorid in immunized rabbits were followed by a lowering of the titer of immune hemolysins.

Deutsche medizinische Wochenschrift, Berlin

49: 601-632 (May 11) 1923

Diet in Treatment of Diarrhea and Constipation. H. Strauss.—p. 601.
*Serodiagnosis of Tuberculosis. F. Klopstock.—p. 602.
Calcium Content of Human Blood Serum. Herzfeld and Lubowski.—p. 603. Conc'n.
Meinicke's Opacity Reaction for Syphilis. Meinicke and Grün.—p. 605.
Experiences with Ponndorf's Cutaneous Tuberculin Immunization. G. Lieschke.—p. 606.
*Psychology of the Starving. Frank.—p. 608.
An Icterus of Uncertain Etiology. K. Hoesch.—p. 610.
Cause of Angiospasms of Pregnancy. H. Nevermann.—p. 612.
*Treatment of Salivation in Epidemic Encephalitis. Fraenkel.—p. 613.
Anaphylactic Phenomena After Eating Eggs. E. Grabe.—p. 614.
Dermatologic Diagnosis. M. Joseph.—p. 614. Cont'd.
*Diagnostic Significance of Bronchophony. K. Noodt.—p. 616.
Body Measurements and Social Standing. H. Wörner.—p. 617.
Absorption of Madder by Rectal Mucosa. A. Bauer.—p. 617.
Legislation on Organizations for Social Insurance. S. Alexander.—p. 618.

Specificity of Serodiagnosis for Tuberculosis.—Klopstock found that Wassermann antigen prepared from tubercle bacilli and lecithin absorbs all the reacting substance from the serum. Antigens prepared in a similar way from typhoid and colon bacilli did not change the reaction. An antigen from diphtheria bacilli absorbed only a small quantity of the tuberculous antibodies. He concludes that the reaction is specific, and that lecithin makes it only more sensitive.

Psychology of the Starving.—Professor Frank of Kharkof reports his psychiatric observations during the recent famine in the Ukraine. He observed twenty-six cases of anthropophagy—the greater number of them in women. Not one man ate his own child; mothers alone did so. The comparatively short period of personal liberty of the peasants accounts for the fact that such crimes occurred only among them, not among German-Russians or Jews, though thousands of them died too. Some women, who ate their children, still kept the home clean by force of habit. Delirious patients invariably died, but some of the starving died with full consciousness. [A footnote states that this article was read at a meeting of the Kharkof Medical Society.]

Treatment of Salivation in Epidemic Encephalitis by Roentgen-Ray Exposures of the Parotid.—Fraenkel confirms the favorable inhibiting influence of irradiation of the parotid on ptyalism persisting after encephalitis.

Diagnostic Significance of Bronchophony.—Noodt finds bronchophony in most healthy persons on the right but not on the left side, except rarely in combination with right bronchophony. Bronchophony on the left side speaks for tuberculosis. If it is present on both sides, an affection of the left lung is probably responsible for it.

Münchener medizinische Wochenschrift, Munich

70: 485-520 (April 20) 1923

*Famine and Epidemics in Russia. Abel.—p. 485.
*Bismuth in Experimental Syphilis. Plaut and Mulzer.—p. 487.
*Determination of Virulence of Germs in Blood. Philipp.—p. 493.
Oxyuriasis: Fistula and Eosinophilia. Schmidt.—p. 495.
Disturbances of Ejaculation of Sperm. Lissmann.—p. 496.
**"Recurrences" After Operation for Gallstones. H. Flörcken.—p. 498.
Endonasal Operation on Lacrimal Sac. H. Herzog.—p. 499.
Dangers of Exploratory Puncture of Pleural Cavity in Infants, and How to Avoid Them. H. Piutti and E. Rominger.—p. 500.
Kulenkampff's Local Anesthesia in Strumectomies. Schnug.—p. 501.
Intermittent Blindness After Skull Injury. Hegner and Naef.—p. 502.
Localization of Cervix in Deep Roentgen Treatment. Langer.—p. 503.
A New Chair for Examination and Operation. F. Binz.—p. 505.
Alleged Premature Birth in Suit for Alimony. Döderlein.—p. 505.
Treatment of Chronic Constipation and Diarrhea. Penzoldt.—p. 507.

Famine and Epidemics in Russia.—Abel was one of the teachers of hygiene sent by the League of Nations to Warsaw, Moscow and Kharkof. He gives some figures gathered in Russia. In the second half of 1919, 2,237 deaths from inanition (8.8 per cent. of all deaths) were reported in Petrograd. The incomplete official Russian statistics assume about three million deaths from starvation. He says edema disease from hunger was very common. In 10 to 15 per cent. of the starving, no edema occurred. These patients had the worst prognosis. The psychic changes in the starving started with indifference toward relatives, while the persons had still a sense of cleanliness and orderliness. Anthropophagy of members of the own family occurred only among low classes of Russian stock, not among the other nationalities. Starvation had a very disastrous influence on the course of infectious diseases. Typhus was very severe, subfebrile, and without exanthem. Patients with relapsing fever had attacks every other day. Measles was followed by noma, sometimes in more than 20 per cent. of patients. He agrees with the opinion of Tarassewitsch, that the epidemics cannot be mastered as long as the famine continues.

Action of Bismuth on Experimental Syphilis of Rabbits.—Plaut and Mulzer found some new bismuth preparations superior to mercury in the treatment of experimental syphilis in rabbits.

Determination of Virulence of Germs in Blood.—In febrile bacteremia, Philipp draws the blood during the chill, defibrinates it, and uses 1.5 c.c. immediately for an agar plate. He places the rest of the blood in the incubator, and makes new cultures with the same amounts of blood after one, two, three, six and twelve hours or at other definite intervals. If the number of colonies is larger in the subsequent cultures, it is a sign of strong virulence of the germs and insufficient humoral resistance of the patient. The prognosis is very unfavorable if the germs multiply in the first hours. If the multiplication occurs only after eight to ten hours, the prognosis is favorable. If the number of germs decreases, the patient is safe.

"Recurrences" After Operations for Gallstones, and the Significance of a Connection Between the Bile Duct and Duodenum.—Flörcken finds that recurrence of pains is extremely rare after choledochoduodenostomy. They are very frequent after cholecystectomy and drainage of the hepatic duct. This may be due to cholangitis, and perhaps spasms of Oddi's sphincter.

Wiener klinische Wochenschrift, Vienna

36: 287-302 (April 19) 1923

*Syphilis and Pregnancy. H. Thaler.—p. 287.
*Gallstone Surgery. H. Lorenz.—p. 291.
*Early Treatment of Esophageal Burns. H. Salzer.—p. 295.
*Specific Roentgensensitiveness of Some Carcinomas. G. Schwarz.—p. 296.
Insulin and Diabetes. A. Lux.—p. 297.
*Treatment of Intertrigo. H. Simchen.—p. 298.
Treatment of "Roentgen Jag" with Hypertonic Solutions. P. Neuda and H. Sielmann.—p. 298.
"Private Practice and Competition of Hospitals." G. Holzknecht.—p. 299.

Syphilis and Pregnancy.—Thaler reports a positive Wassermann reaction in 4.7 per cent. of the women at the First Obstetric Clinic at Vienna. Syphilis is the usual cause of miscarriages in the last four months of pregnancy, and of macerated fetus. It is less frequent in the abortions in the first months. Complement fixation should be repeated, because of the occurrence of nonspecific reactions. The reaction is especially subject to errors in the first six days after confinement. Retroplacental blood should not be used for the test. In spite of all objections, the Wassermann test is a most valuable aid. He requires at least five years after the primary affection and at least one year of negative Wassermann reaction before consenting to marriage. Energetic treatment should precede marriage, and be repeated at the beginning of every pregnancy. Arsphenamin is well tolerated, except in disturbances of the kidneys. The syphilitic mother should nurse her child. Otherwise only a syphilitic nurse, or artificial feeding should be used. If the mother acquired syphilis in the later part of the pregnancy, if generalization did not occur, and if the child is free from syphilitic symptoms, it may be healthy or syphilitic. Only artificial feeding is indicated in such an exceptional case.

Gallstone Surgery and Transduodenal Choledochotomy.—Lorenz prefers the transduodenal method, in spite of his 15 per cent. mortality, to dilatation of the common bile duct, because the latter method works in the dark. A carcinoma of Vater's papilla may be detected by the first method and the patient's life saved.

Early Treatment of Corrosive Injury of the Esophagus.—Salzer starts dilatation of the esophagus from the second to the sixth day after the injury. His results are excellent.

Specific Roentgensensitiveness of Some Carcinomas.—Schwarz believes that the curability of a carcinoma by roentgen rays is proportionate to the tendency of the organ from which it originated toward involution (for instance, uterus). Therefore he advises roentgen castration not only in carcinoma of the uterus, but also in tumors of the breast, and iodin treatment in tumors of the thyroid.

Treatment of Intertrigo with Hexamethylenamin.—Simchen treated fourteen infants suffering from intertrigo and gluteal erythemas with daily doses of 0.5 to 1 gm. of hexamethylenamin. The children recovered in seven to nine days. This result is a confirmation of Cooke's opinion that gluteal erythema is due to ammoniacal fermentation of the urine.

Zeitschrift für Krebsforschung, Berlin

20: 1-124 (May 12) 1923

Increase of Permeability of Skin for Tar by Removing the Fat, and Its Relation to Artificial Cancer. L. Blumenthal.—p. 1.
*Action of Inactivated Tumor Material on Chicken Sarcoma. E. Berger.—p. 10.
*Cells in Filtrates of Transplantable Chicken Sarcoma. Jung.—p. 20.
*Transplantation of Chicken Sarcomas. Teutschlaender.—p. 43.
Bjelogolowy's Alleged Sarcomas. Teutschlaender.—p. 70.
Biology of My Transplantable Chicken Sarcoma. Teutschlaender.—p. 79.
Experiments on the Presence of Carcinogenous Substances in the Tar from Heidelberg. Teutschlaender.—p. 111.

Action of Inactivated Material from Tumors on the Growth of Transplantable Chicken Sarcoma.—Berger continued Teutschlaender's therapeutic experiments with injections of a normal salt solution extract of chicken sarcomas, which had been kept for fifteen minutes at a temperature of 60 C. He was not able to prevent the initial growth of the transplanted tumor. Yet the developed tumor disappeared in three fowls, and their life was prolonged. Other animals died from cachexia or sudden metastases some time after the treatment.

Presence of Cells in Membrane Filtrates of Transplantable Chicken Sarcoma.—Jung believes that nuclei or parts of the cells can pass through the filter, because some cells are very small. A formed agent is more probable than a fluid in transplantable sarcomas.

The Supposed Cell-Free Transplantation of Chicken Sarcomas.—Teutschlaender discusses the possible explanations of tumors which are transplantable after filtration. The specificity of the new tumors speaks strongly against a parasitic theory: A chondro-osteosarcoma develops cartilage even in places where no such tissue could be present. His investigations convinced him that presence of cells in the filtrates is not impossible, as he assumed before. On the contrary, it is the most plausible explanation. It cannot, however, be denied that transplantation by filtrates is an interesting fact.

Zentralblatt für innere Medizin, Leipzig

44: 257-272 (April 21) 1923

*The Blood in Jaundice for Which the Liver Is Responsible. A. Fortwaengler.—p. 257.

Blood in Hepatogenous Icterus.—Fortwaengler confirms the observations of H. Pribram, who found polyglobulia frequently in icterus, and explained it by the protective action of the increased amount of cholesterol that is present in such cases. Other constituents of the bile may appear in different combinations in blood in hepatogenous icterus.

Casopis lekaruv ceskych, Prague

62: 221-248 (March 3) 1923

Agrammatism. A. Heverech.—p. 221. Conc'n p. 256.
Lymphogranulomatosis of Stomach and Intestines. Novotny.—p. 224.
Predilection of Parts of Eye for Tuberculosis. J. Deyl.—p. 226. Conc'n.
"Syphilis of Bladder." K. Neuwirt.—p. 228.
Theoretical and Practical Significance of Sedimentation Speed of Erythrocytes. J. A. Sefcik.—p. 232. Conc'n p. 259.
*Turpentine in Treatment of Adnexitis. F. Horalek.—p. 238.

Treatment of Inflammatory Gynecologic Affections with Injections of Turpentine.—Horalek treated fifty-three women with more than 700 injections of turpentine oil. He has the impression that the patients did not gain much by the treatment.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1842-1964 (May 5) 1923

*Meningococcus Sepsis. F. J. L. Woltring.—p. 1845.
Structure of Ganglion Cells. F. de Moulin.—p. 1853.
Ultimate Fate of Tuberculosis Dispensary Patients. P. J. L. de Bloeme.—p. 1859.
Recent Work of Alexis Carrel. M. A. van Herwerden.—p. 1869.
"Magic Remedies" in History. M. A. van Andel.—p. 1872.
Historical Research on Dodonaeus. 1517-1585. F. W. T. Hunger.—p. 1883.

Meningococcus Sepsis with Latent Meningitis.—In the first of Woltring's two cases, the young man's persisting septicemia suggested septic endocarditis, but, after seven weeks, typical meningitis developed, with meningococci in the fluid. Bacteriologic examination of the blood had been negative; an ascites-agar medium had not been tried. Improvement rapidly followed antimeningococcus serum treatment. The whole course was more than three months. The heart seems normal now. Woltring has found only four similar cases on record of meningococcus sepsis resembling septic endocarditis, with final meningitis. In his second case a previously healthy young sailor had repeated attacks during two months which were diagnosed as hysteria, but they may have been the manifestations of an ambulatory meningococcus sepsis terminated by a rapidly fatal epidemic cerebrospinal meningitis. No other cases of meningitis were known at the time.

Acta Chirurgica Scandinavica, Stockholm

56: 1-88, 1923. Third Supplement

*Plastic Operations on the Thorax in Pulmonary Tuberculosis. H. C. Jacobæus and Einar Key.—p. 1.

Thoracoplasty in Pulmonary Tuberculosis.—Jacobæus and Key give the complete case histories of their 24 male and 36 female patients treated by resection of ribs at two sittings since 1915. The patients were all chronic invalids, scattering tubercle bacilli, and many were restored to active life. The fact that so many were freed from expectoration and tubercle

bacilli is a great gain from the standpoint of prophylaxis of tuberculosis. Of the 44 cases before 1921, the earning capacity was restored in 27 per cent. and in 18 per cent. the condition was improved. No improvement was evident in 7 per cent.; 26 per cent. have succumbed to their tuberculosis and 11 per cent. to intercurrent disease. Sauerbruch has reported a practical cure in 35 per cent. of his 381 cases. The presence of small foci in the other lung is not as decisive for or against thoracoplasty as the tendency to an active or stationary course. With an old, shriveling process the operation might be attempted even if the foci were not very small. To determine the trend, it is wise to keep the patient under observation for a time. They usually resect a total of 140.7 cm. of the ribs; this is more than most surgeons advocate. They generally remove the drain the same day.

Acta Pædiatrica, Upsala

2: 209-406 (May 31) 1923

*Influence of Infection on Infant Metabolism. N. Malmberg.—p. 209.
Still's Disease. N. Johannsen.—p. 354.
*Scurvy in One Twin. A. Wallgren.—p. 376.
*Balancing Biocatalyzers in Infants. Lichtenstein and v. Euler.—p. 383.
Unusual Forms of Syphilis of the Liver. H. Bergstrand.—p. 400.

Metabolism in Healthy, Naturally Nourished Infants and the Influence of Parenteral Infection and Intoxication.—Malmberg, in unchanged feeding of two children, vaccinated against smallpox and typhoid, found increased elimination of fats, nitrogen and minerals, indicating effects on retention, with practically unchanged resorption. The degree of change appeared independent of the temperature, and he would change the "fever and metabolism" expression to "infection and metabolism." In both, the mineral, and also the nitrogen retention decreased.

Barlow's Disease in One of Two Twins.—Wallgren found scurvy in a boy aged 14 months, while absent in his twin sister, both having been nourished on identical quantities of the same food, since taken from the breast at the age of 3 months, when both were normal. Vitamin poverty in the food is not the main cause for scurvy, since foods rich in vitamin content may also lead to symptoms of avitaminosis. He believes poor assimilation of the scant vitamin, due to dyspepsia, the principal factor in the case of this boy.

Experiments in Balancing Water-Soluble Catalyzers in Infants.—Lichtenstein and Euler believe the uncertainty of the terminology a hindrance to solution of the problem, and that experiments are risky until measurements have shown to what ends the method leads and to what extent the results obtained through it agree with fixed principles. Their experimental material consisted of water-soluble vitamin (yeast); the mixed milk of six healthy women in the second and third lactation month, and the mixed samples of urine and feces of from six to eight naturally nourished infants, aged from 3-16 weeks. The number of biocatalyzer units assimilated was about twice that discharged.

Hospitalstidende, Copenhagen

66: 249-264 (March 28) 1923

Boeck's Sarcoid on Mucous Membranes. C. Hvidt.—p. 249. Conc'n.
*Photo-Electric Dermatitis. S. Lomholt.—p. 256.

Electric Light Dermatitis.—Lomholt wishes to have the clinical picture of dermatitis furnished by two women, aged 20 and 29, first described by Haslund under the name "dermatitis photo-electrica," recognized. The symptoms developed in both in the same way during treatment for lymphoma or lupus with concentrated carbon arc light at the Finsen Institute. The lesions were identical, small, red, scattered papules on chest, neck or back, the only difference being that thrombophlebitis was present in the first and lacking in the second case. In both cases the dermatitis appeared during each treatment and disappeared during the intervals, the affection fluctuating regularly with the strength of the light.

66: 265-280 (April 4) 1923

*Diagnosis of Death by Strangulation. J. Fog.—p. 265.
Histobacteriologic Diagnosis of Meningococcus Sepsis. P. Møller.—p. 275. Conc'n, p. 281.

Diagnosis of Death by Strangulation.—Fog says the main difficulty of diagnosing death from mechanical strangulation lies in the frequent variation of the signs from type. Such signs as extravasation of blood in external marks, or hemorrhage in underlying tissues are not always present, due in some cases to sudden death from trauma of the vagus or its branches, especially the superior laryngeal nerve, at the moment of the grip on the throat, and in some instance to postmortem suspension to hide the crime. He calls attention to the importance of seemingly insignificant signs, of any nature, as they may give the clue to the mode of death. In one of the fourteen cases described in detail, the victim survived unconscious for two days.

66: 281-296 (April 11) 1923

*Gastro-Enteritis from Milk. Christensen and Grinsted.—p. 291. Conc'n p. 297.

Epidemic of Gastro-Enteritis from Paracolon Bacilli in Milk.—Christensen and Grinsted, last October, found that fifty-six patients and thirty-nine members of the personnel at the Aalborg Hospital were affected with severe gastro-intestinal symptoms which lasted two or three days, but caused no deaths. A cow of the herd furnishing the milk for the hospital, which had died the same day, was found in a septic condition with enormously enlarged spleen, acute hepatitis, petechiae on epicardium and endocardium, inflammation of the mucous membrane of the intestine, and subcutaneous edema of the udder. Bacteriologic investigation revealed the identity of the disease of patients and animal, and that paracolon bacilli may be virulent in man. They found *Bacillus enteritidis* and other bacilli of the meat poison type identical with paracolon bacilli in agglutinating and other tests. A paratyphoid epidemic from milk of cows infected with *B. enteritidis* has been described by Hübener; Delépine also refers to a gastro-intestinal mass infection, in Manchester, by *B. enteritidis* in milk from a herd in which one cow had mastitis from both paratyphoid and enteritidis bacteria. They believe agglutination tests in suspected cases would show such diseases more common than is supposed, but more frequently from infection through meat than through milk.

Ugeskrift for Læger, Copenhagen

85: 421-436 (June 14) 1923

*Protein Therapy in Chronic Arthritis. Jansen and Begtrup.—p. 421.

Parenteral Protein and Other Forms of Shock Therapy in Chronic Arthritis.—Jansen and Begtrup had no results from experiments with injections of a 5 per cent. casein solution in six patients with Strümpell's arthritis deformans; sulphur in oil injections in four cases, and milk injections in one case, when other therapeutic methods were discontinued.

85: 437-452 (June 21) 1923

Hygiene of Summer Houses. M. Hindhede.—p. 437.
*Form and Position of Stomach in Consumptives. J. Paludan.—p. 440.
*Active Syphilis 62 Years After Infection. H. Boas.—p. 443.
Insulin Production in Scandinavia. A. Krogh.—p. 443.
Czechoslovakian Watering Places. K. Secher.—p. 449.

Research on the Form and Position of the Stomach in Male Phthisis Patients.—Paludan by roentgenoscopy determined the form and position, in relation to the umbilicus, of the stomach in 111 male patients with phthisis. The anatomic relations of each were determined by examinations of height, chest volume, lower thoracic opening, and the Becher-Lennhoff and epigastric index. These phthisis patients had longer stomachs in lower positions than normal persons. The congo index was lower and the weight deficit greater, the lower the position of the stomach. Patients with bacilli, in each stage, were taller and presented larger figures for the chest volume and the inferior aperture than those without, of the same stage, but in regard to age, conditions were reversed.

Active Syphilis and Positive Wassermann Reaction Sixty-Two Years After Infection.—Boas reports the case of a patient, aged 83, at the St. Joseph's Hospital, Copenhagen, under treatment for urine retention, giving repeated positive Wassermann reactions, who at the age of 20 had been treated for primary syphilis at the public hospital at Christiania. He had been married twice; neither of his wives had an abortion; he has seven healthy children, none dead, and has never been aware of his disease.